amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

VOL. 47, No. 12 DECEMBER 1979

FEATURED IN THIS ISSUE:

- ★ CONSIDERATIONS FOR A WADLEY LOOP VHF RECEIVER FRONT END
- ★ FOUR 5/8 WAVE PHASED VERTICAL ARRAY FOR 2 METRES
- ★ BEAMS NOW MADE IN AUSTRALIA
- ★ REVIEWS — IC551D AND YAESU FT-7B
- ★ A LIVING LEGEND

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J.I.L. SX-100 16 CHANNELS VHF/UHF SCANNING RECEIVER.....Price $407.

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SEE REVIEW ETI NOV. '79

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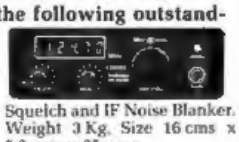

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MFJ-941B 300W Ant. coupler/SWR/Power Meter Co-Ax SW for Bal and Un Bal Line (Inc. Balun) **$145.00**
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MFJ-901 200W Ant. coupler for Bal and Un Bal Line (Inc. Balun) **$97.00**
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SPECIAL INTRODUCTORY PRICE $289.

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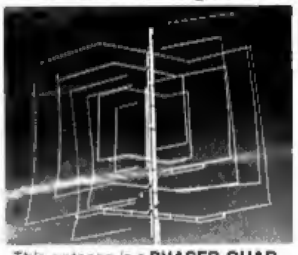
* * * * * * * * * * * * * *

GREAT CIRCLE MAP

THIS POPULAR MELBOURNE CENTRED MAP IS STILL AVAILABLE FROM GFS

PRICE $1.00 + 75c P&P

TET SWISS QUADS



This antenna is a **PHASED QUAD** *and well known as a HB9CV QUAD. Its concept is to drive the Radiator and Reflector at the same time with* **phase differences** *to obtain more gain and better front-to-back ratio than the conventional quads.*

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TECHNICAL

GENERAL

DEPARTMENTS

Cover Photo

"A LIVING LEGEND"

Mrs. F. V. McKenzie, O.B.E., being presented with her Membership Certificate to the Royal Naval Amateur Radio Society by T. R. Clark VK2ALG, the Australian Branch Manager of R.N.A.R.S.

August 29, 1979 — See story "A Living Legend", page 34.

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Broadcasts— 1825, 3595, 7146 kHz, 28.32, 52.1, 52.525, 144.1, 145.6, 146.4, Rptr. Ch. 3 — Gosford, Ch. 4 — Lismore, Ch. 5 Wollongong, Ch. 6 — Dural 11.00h local (Evening 0930Z). Relays on 160, 80 and 10m, VHF and Rptr. Ch. 3, Ch. 5, Ch. 6, and Hunter Branch, Mondays 0930Z on 3595 kHz, 10m, and Ch. 3 and 6. RTTY Sunday 0030Z 7045, 14090 kHz, Ch. 52, 0930Z 3545 kHz, Ch. 52.

VIC.:
President — Mr. E. J. Buggee VK3ZZN
Secretary — Mr. G. F. Atkinson VK3YFA
Broadcasts— 1840, 3600, 7136 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (S) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Giells VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 46): 09.00 EST.
Gen. Mtg. — 3rd Friday.

SA:
President — Mr. I. J. Hunt VK5QX
Secretary — Mr. W. M. Wardrop VK5NWM
Broadcasts— 1820, 3550, 7085, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. Ross Greenaway VK6DA.
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.485, 52.290 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. I. Nicholls VK7ZZ
Secretary — Mr. P. T. Blake, VK7ZPB
Broadcasts— 7130 (AM) kHz with relays on 2m Ch. 2 (S), Ch. 6 (N), Ch. 3 (NW), 09.30 EST.

NT:
President — Mr. T. A. Hine VK8NTA
Vice-Pres. — Barry Burns VK8DI
Secretary — Robert Milliken VK8NRM
Broadcasts— Relay of VK5WI on 3.555 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal Information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h). P.O. Box 123, St. Leonards, NSW 2065.
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Weekdays 10.00-15.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton.
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 46, Canberra, A.C.T. 2600.
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VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Geo. Luxon VK5RX, 203 Belair Road, Torrens Park, S.A. 5062.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1415, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, 23 Landale Street, Box Hill, Vic. 3128.

QSP —

HELPING OTHERS

Many Radio Amateurs have secured their licences within the past five years, indeed the past two years, and yet, we still have Radio Amateurs who have been licensed for 50 years.

It is right to say that our hobby is a highly individualistic pleasure. In saying this, I must acknowledge that what we do as individuals is to build on the efforts of those who have gone before us. To put it bluntly, very few of us have that innovative streak to produce and develop something entirely new in concept and execution. To phrase it more kindly, we each need to clarify our own viewpoint by discussing matters with others of like mind, or greater ability or insight.

It therefore seems that our hobby must be a blend of the individualistic and the corporate. For myself, I have always found another willing Radio Amateur who is better informed, more capable, and more knowledgeable in some branch of my hobby. What is more, this help has always been forthcoming.

Having said this, I must emphasise that all of us have varying talents, and I would suggest to you, you personally, that your talent may be just what the Amateur fraternity needs. Consider this, ponder over it, and see what part you can play which will benefit so many others towards a fuller enjoyment of their hobby. I can assure you that your personal benefit will be manifold.

The variety of interests within our hobby are wide-reaching. I suggest just a few: operating, constructing, a mixture of both, experimentation with antennas, interest in a particular band, work on VHF, UHF, ATV, CW communication, and many more fields. There is room for all these interests. The WIA, by its Constitution, is formed to develop all these interests. It is up to our Institute to see to it that you have the blessing of the regulatory authority to pursue and develop any interest not contained within the terms of your licence.

As a final thought, I must state that I am a Radio Amateur first with a feeling that I may have a talent for administration by virtue of educational background. You as an individual may have a talent in a different direction, which will contribute much to the advancement of many others.

Best 73, and a happy Christmas to you all.

IAN NICHOLS VK7ZZ,
Tasmanian Divisional President. ■

WIANEWS

Information about WARC 79 is included in the "International News" columns in AR.

One meeting of Executive in October — on the 11th — presided over by the Acting Federal President, Peter Wolfenden VK3ZPA.

INTRUDER WATCH

It was noted that no volunteer had come forward to take over from VK3LC.

Market research was required to assess the possible sale of WIA ties. If any reader believes a tie should be available on sale to members please write to WIA, Toorak. The price of a reasonable quality tie would be about $9 or $10 each.

As the result of Institute efforts, a donation of equipment suitable for UHF repeaters has been received and gratefully accepted. Almost all Divisions will benefit.

A videocassette in colour of the JARL Okino Torishima DX-pedition last year is now available for Divisions from the Federal Videotape Co-ordinator, John Ingham VK5KG. This was finally recorded from the JARL 16 mm film which they kindly loaned to the WIA for the purpose. A very interesting programme according to all accounts.

The Executive office expects to be under notice shortly, as the building now occupied is scheduled for re-structuring. Suitable office space at a reasonable price in or not too far distant from Toorak appears to be almost non-existent. Even a suitable house

would suffice. Efforts to find alternative accommodation are proceeding.

The Executive wishes to acknowledge with grateful thanks the receipt of the following donations from members towards the expenses of WARC 79 —

LIST No. 8

L50426	*$10.00*	*Geelong Amateur Radio-TV Club*	*$27.00*
VK2JR	*$5.00*	*VK2AHP*	*$10.00*
Oxley Region ARC	*$50.00*	*WIA WA Division*	*$100.00*
Per WIA Victorian Division from VK3AJT	*$500.00*	*VK6SJ*	*$2.00*

The total of donations received from members and non-members so far during 1979 is $9,029.54 towards WARC 79 expenses. Even by world standards this is an excellent response and everybody concerned should rightly congratulate themselves. Incidentally, the appeal for funds for this purpose has not closed.

This is the time of the year to wish you all a very Merry Christmas and a Prosperous New Year. Are we fortunate or unfortunate that we cannot foresee what the 1980s has in store for us? Long live the optimists. ■

QSP

PREFIXES

According to October 1979 Radio Communications the ITU has allocated prefixes H8A-H9Z to the Republic of Panama and T3A-T3Z to the Republic of Kiribati (formely VR1 to VR3). To mark the 50th anniversary of the issue of the first amateur licence in the Netherlands the amateurs in this country will be permitetd to add "50" to the figure in their call signs from 10th October to 10th November, 1979. Thus PAc becomes PA50, PA3 becomes PA53, etc. ■

"ORANGE JELLY"

In "TT" by Pat Hawker G3VA, Radio Communications September 1979, there is a short comment on the sunspot cycle. "The idea of a 22-year rather than an 11-year cycle is supported by the fact (discovered by Harold Babcock some two decades ago) that the solar magnetic field reverses polarity in successive 11-year periods (like that of an AC waveform) . . . Professor Dicke (of Princeton University) puts forward a speculative hypothesis as to the nature of the buried "clock". He writes: "It seems very likely that it is a magneto-fluid oscillator. A crude analogue is an oscillating bowl of jelly. The magnetic field lines in the conducting solar gas act like stretchable threads of rubber lacing the 'jelly' together." When it comes down to basics our RH DX depends on that flaming great bowl of jelly in the sky." ■

RTTY

From "Arewise" of October 1979 comes news that ANARTS (Aust. National Am. Teleprinter Soc.) had 552 members at the end of September and in members' news is an item about VK5ZNN's RTTY activities for which he uses a pencil between his teeth in preference to his mechanical arms, having been invalided some years ago in an explosion which blew off his arms below the elbows. This issue of Arewise also contains part 2 of the RTTY operating standards article. ANARTS runs a half hour broadcast each Sunday at 0030Z on 14.090, 7.045 and 146.6 MHz and at 0930Z on 3.545 kHz and 146.8 MHz from VK2. ■

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VK7 — Mr. P. D. Frith VK7PF.

99 — 73 — 88 — 33

T. W. M. Duerdin ZL4IJ
166 Layard St., Invercargill, New Zealand

They passed as she went down the hill,
  And he came from below;
Their eyes met in a fleeting glance,
  He turned and breathed, "hello";
But, wary, she continued down
  — How could she know his line? —
And when he caught up by her side,
  She threw him, "ninety-nine".
He kept his distance — not too far —
  Appraising from behind;
He wasn't put off by her code
  Of charlie-whisky nined.
Her signal peaks were gently curved,
  And every one chirp-free;
He softly whistled low and sweet,
  An eager, "seventy-three".
It jumped her circuit-breaker switch,
  And fused her over-load;
Her flip-flop stand-by circuits peaked
  As IC current flowed.
She turned her beam full on to him
  To sense his solid-state;
Her dipole folded as she clicked
  A tender, "eighty-eight".
Within the month they vowed their troth
  In solemn marriage rites;
They've made their home in Cargill Town
  And live in Rosedale Heights —
Away above the q r n
  Where sigs are static-free,
And in each other's fond embrace
  They whisper, "thirty-three".

99 means Keep off my frequency.
73 means Best Wishes, Kindest Regards.
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(From "Break-In" June 1979) ■

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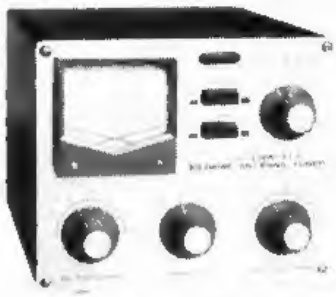

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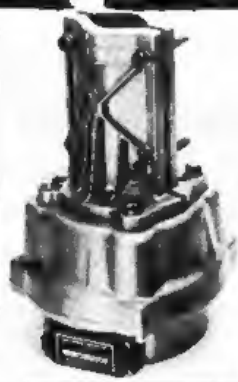

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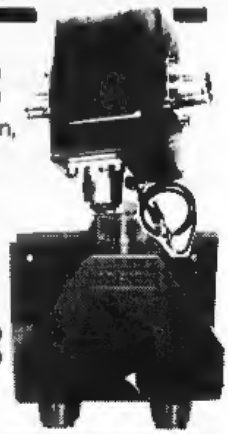

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IC255A Specifications: General. Numbers of semi-conductors: Transistors 49, FET 4, IC 29, Diode 80. Frequency coverage: 143.800 — 148.195MHz. Frequency resolution: 25KHz steps, 5KHz steps with TS switch depressed. Frequency Control: Microcomputer based Digital PLL synthesizer. Independent Transmit-Receive Frequency Capability. Memory channels: 5 channels, any inband frequency programmable. Usable conditions: Temperature: — 10°C — 60°C (14°F — 140°F). Operationable time: continuous. Frequency stability: Within ±1.5KHz. Antenna impedance: 50 ohms unbalanced. Power supply requirement: 13.8V DC ±15% (negative ground) 5.5A Max. Current drain: Transmitting, HIGH (25W) Approx. 5.5A. LOW (1W) Approx. 1.5A. Receiving, at max audio output Approx. 0.7A. Squelched Approx. 0.5A. Dimensions: 185mm (W) x 64mm (H) x 223mm (D). Weight: Approx. 2.5kg. **Transmitter.** Output power: 25W (HIGH), 1W (LOW). Emission mode: $16F_3$. Modulation system: Variable reactance frequency modulation. Max. frequency deviation: ±5KHz. Spurious emission: More than 60dB below carrier. Microphone: 1.3K ohm dynamic microphone with built-in preamplifier and push-to-talk switch. Operating mode: Simplex, Duplex (±600KHz from receive frequency and any inband frequency separation programmable). **Receiver.** Receiving system: Double-conversion superheterodyne. Modulation acceptance: $16F_3$. Intermediate frequency: 1st: 10.75MHz, 2nd: 455KHz. Sensitivity: More than 30dB S+N+D/N+D at 1μV. Less than 0.6μV for 20dB Noise quieting. Squelch sensitivity: Less than 0.4μV. Spurious response rejection ratio: More than 60dB. Selectivity: More than ±7.5KHz at —6dB point. Less than ±15KHz at —60dB point. Audio output power: More than 2.0W. Audio output impedence: 8 ohms.

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CONSIDERATIONS FOR A WADLEY-LOOP VHF RECEIVER FRONT END

Roger Harrison VK2ZTB
14 Rosebery St, Balmain 2041

This is not an article for the raw beginner. It will interest all VHF DXers and the advanced constructor. The author proposes some novel and cunning schemes to overcome the many difficulties of building a wide-range stable VHF VFO.

The lower VHF region of the spectrum, between 30 MHz and 100 MHz, promises to be of great interest propagation-wise over the next few years. During my spare time over the recently passed sunspot minimum, I optimistically mused on the possibilities of the peak of sunspot cycle 21 and thought of ways and means I could monitor what, to me, is one of the most interesting portions of the spectrum — to wit, the lower VHF region.

Lots of VHF converters to cover 2 MHz or 4 MHz slices of the spectrum seemed like a good way to do it and, naturally enough, I did a little figuring on how to achieve this using an IF receiver covering either 14 MHz or 28 MHz and a series of modified 6UP VHF converters (remember the 6UP converters?). It was easy enough to do but the prospect of buying 30 or more crystals to cover a range of 60 MHz (i.e., from 40 MHz to 100 MHz say) was a little daunting.

I examined the idea of using a frequency synthesiser which, to cover such a wide range, was either beyond my development resources or had unacceptable limitations. However, I haven't given up the idea . . . quite.

Next I looked at the Wadley-Loop, that famous front end band selection system devised by Mister Wadley, popularised by Barlow (as in the Barlow-Wadley XCR-30) and brought to its technological zenith by Yaesu et al. Racal got in there somewhere along the line too.

Commencing with a basic block diagram, I tackled the mathematics of the system, rapidly getting confused. But, with a little juggling, I came up with a system that, while practical on paper (??), suffered from a few possible nasty problems. After several trial runs (on paper) and a few development sessions on filters and harmonic generators, I let the project lapse.

Recently, my interest in a VHF Wadley-Loop front end was restirred when I had occasion to examine an FRG-7000 during a time when I was examining the recent performance of the six metre band and its future possibilities.

Before I explain the system proposal in detail, it will be necessary (and instructive) to examine the basic Wadley-Loop tuning system.

VHF WADLEY LOOP SYSTEM

The basic block diagram is shown in Figure 1, along with some system equations. I'll examine how it works with reference to the familiar HF Wadley-Loop receivers such as the FRG-7, XCR-30, FRG-7000, etc. Clearly, there are several ways of realising a system, they're not all the same.

The "baseband" oscillator is a crystal-locked oscillator on a frequency equivalent to the basic tuning range. For the familiar Wadley-Loop HF receivers, this is 1 MHz. The whole tuning range is generally 1-30 MHz for these receivers. The IF receiver covers 3 MHz to 2 MHz to tune *up* the band selected, that is, it is a reversing tuning system. We shall see why shortly. The IF receiver is really a conventional receiver acting as a tunable IF, the Wadley-Loop front end selecting 1 MHz bands in the range 1-30 MHz which you tune across with the IF receiver.

Now, the "band", or "MHz" tuning as it is commonly designated, oscillator is a free-running, tunable VHF oscillator covering (for example) 56.5 MHz to 84.5 MHz. The "transfer" filter is centred on 55 MHz and is 1 MHz wide. The "baseband" oscillator will be on 1 MHz and the harmonic generator will provide harmonics every 1 MHz. The harmonics are generally limited by a filter as only a range of them are used; in this example, only the harmonics from 3 MHz to 32 MHz are required. The second injection frequency is 52.5 MHz, which of course will heterodyne the signals in the transfer filter to the 3-2 MHz IF receiver range.

To get a clearer picture of a typical HF Wadley-Loop system, take a look at Figure 2. If you do a little substitution in the equations in Figure 1 you'll see how the numbers resolve themselves.

Having got this far, let's examine the numbers relating to how you tune in a signal on, say, 28.9 MHz.

The band oscillator would be set to 83.5 MHz (to tune the range 28-29 MHz). This frequency would then be heterodyned with 31 MHz from the harmonic generator to produce an output in the passband of the re-mix at 52.5 MHz — the second injection frequency.

The signal on 28.9 MHz would be heterodyned to 54.6 MHz, by the first signal mixer, into the passband of the transfer filter. The 54.6 MHz "transferred" signal would then heterodyne with the 52.5 MHz second injection frequency to appear at 2.1 MHz. Setting the IF receiver to 2.1 MHz would then tune in the signal transferred from 28.9 MHz.

Well, that's great, and it saves a whole lot of crystals and converters and covers a very wide band, but what's the other big advantage of the Wadley-Loop system, you say?

Drift cancellation.

Now, a receiver covering 3-2 MHz can be made quite stable, superb in fact. But a VHF oscillator is another kettle of fish. More like a can of worms really. In order to get sufficient stability to keep an SSB signal resolved, one would have to build a rather extraordinary oscillator for the band or MHz oscillator. It is, in fact, an impractical task. (I didn't say impossible!)

What the Wadley-Loop does is to cancel the effect of any drift in the band oscillator. Any error in setting the band oscillator is also cancelled. Thus, design stringencies on the band oscillator are reduced.

For argument's sake, let's say the band oscillator drifted up in frequency by 20 kHz. Thus, instead of remaining on 83.5 MHz like it was told, it wandered to 83.52 MHz.

When mixed with 31 MHz in the pre-mixer, this would heterodyne to 52.52 MHz, which becomes the new value for the second injection frequency.

The signal on 28.9 MHz would be transferred to 54.62 MHz by the first signal mixer. When mixed with the new second injection frequency of 52.52 MHz in the second signal mixer, the result is still 2.1 MHz!

There are practical limitations on the amount of allowable drift and setting error in the band oscillator and the bandwidth of the re-mix filter is chosen accordingly. The figure of ± 80 kHz indicated in Figure 2 would seem difficult to achieve at 52.5 MHz but it can be done by a rather cunning, yet simple, scheme as we shall see later.

A 1 MHz bandwidth with reasonable stop-band roll-off for the transfer filter is not too difficult to attain at 55 MHz.

MATHEMATICALLY

To understand how a signal, f_{RF} is "transferred" to the IF receiver at frequency f_R, the mathematical relations can be expressed as follows:—

The signal, f_{RF}, is first transferred to f_T by the first signal mixer and then converted down to f_R by the second signal mixer. We can relate f_T to f_R and f_{RF} with the following equations —

Now, $f_T = f_R + f_S$ ——(a)

also $f_T = f_B - f_{RF}$ ——(b)

thus, $f_R + f_S = f_B - f_{RF}$

therefore, $f_R = f_B - f_{RF} - f_S$ ——(c)

Referring to the example in Figure 2,

$f_R = 83.5 - 28.9 - 52.5$

$= 2.1$ MHz!

To determine which harmonic is required (determining the "band" selected) to produce the second injection frequency (which we know is fixed by other considerations), f_H is related to f_S as follows:—

$f_H = f_B - f_S$ ——(d)

from Figure 2 example:

$f_H = 83.5 - 52.5$

$= 31$ MHz!

The IF receiver frequency, f_R, can be related to f_{RF} in another way as follows:— from equation (c),

$f_R = f_B - f_{RF} - f_S$

re-arranging equation (d),

$f_S = f_B - f_H$

substituting this in equation (c)

$f_R = f_B - f_{RF} - f_B + f_H$

thus, $f_R = f_H - f_{RF}$ ——(e)

From equation (e) it can be seen that f_{RF} and f_B are related purely by which harmonic is "selected" (by the band oscillator setting) to produce the second injection frequency, f_S, and f_R will be independent of "errors" in f_B resulting from inaccurate setting or frequency drift, provided these are within the limits of the re-mix filter bandwidth. The latter is determined by separate considerations.

To illustrate mathematically how the error or drift cancellation works to provide an output signal, f_R, which is independent of errors in f_B, let's designate the error component of f_B (drift or setting error) as "df_B".

Now, by re-arranging equation (a), we get

$f_R = f_T - f_S$

We know from equation (b) that

$f_T = f_B - f_{RF}$

and by re-arranging equation (d), we get

$f_S = f_B - f_H$

Re-writing these to include, say, a positive error component $+df_B$ —

Thus, $f_S = (f_B + df_B) - f_H$

and $f_T = (f_B + df_B) - f_{RF}$

Substituting in the re-arranged equation (a),

$f_R = [(f_B + df_B) - f_{RF}] - [(f_B + df_B) - f_H]$

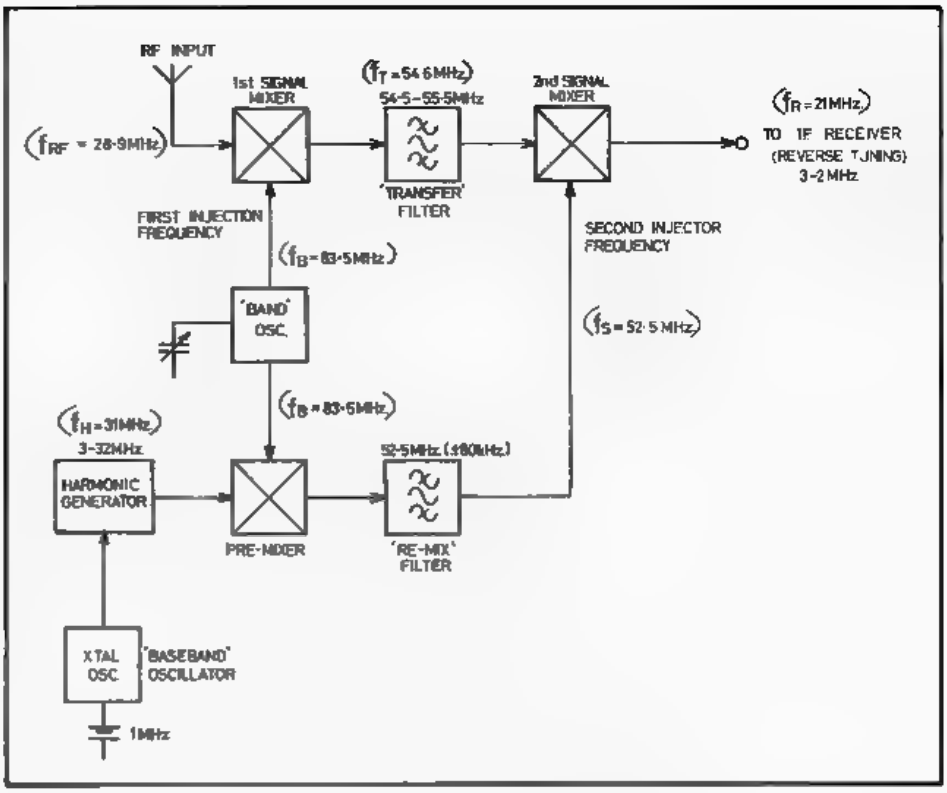

FIGURE 1: Basic Wadley Loop System.

then

$f_R = f_R + df_B - f_{RF} - f_B - df_B - f_H$

the f_B and df_B terms will therefore cancel resulting in:

$f_R = f_H - f_{RF}$

which is equation (e) and thus, as explained, f_R is independent of errors in f_B.

VHF WADLEY-LOOP SYSTEM

Having reached an understanding of the basic Wadley-Loop system, I can now lead you on to my proposal for a VHF front end using the system.

First up, a reasonable choice for the base-band needs to be made. I chose 2 MHz. Firstly, because a receiver covering a 2 MHz range around the middle of the HF spectrum is easy to construct and/or a general coverage receiver may be used. Secondly, using the 28-30 MHz range on an amateur HF receiver or transceiver, with all its attendant advantages, was a possibility tucked away in the back of my mind. Base-band ranges of 1 MHz and 4 MHz were rejected for a number of reasons, 1 MHz having technical problems and 4 MHz being too broad a range.

Next, what represents a reasonable coverage across the lower VHF spectrum? As suggested in the preamble, 30 MHz to 100 MHz is the area of interest. Owing to conflicting requirements, explained later, I eventually settled on 35 MHz to 95 MHz. From prior experience of monitoring the lower VHF spectrum for observations of unusual propagation, this range represents quite a reasonable compromise.

As the transfer filter has to be above the upper frequency of the input range, breakthrough from strong broadcast transmissions (i.e., TV) would have to be avoided and thus the selection of the limits of the transfer filter needed to take this into account. Another consideration was the practical achievement of a filter with a 2 MHz bandwidth and acceptable shape fatcor. The FM broadcast band at 88-108 MHz and TV channel 5a at 137-144 MHz therefore had to be avoided. This placed the transfer filter somewhere between 108 MHz and 137 MHz. However, a "guard" band of about 5 per cent would be necessary to place any possible interference well down the skirts of the transfer filter. Thus, it had to be between 113 MHz and 130 MHz.

Now, the re-mix frequency (or second injection frequency), f_S, has to be below the transfer filter. Again, to avoid possible breakthrough problems, f_S should be located away from the broadcast bands. Thus, both f_R and f_T need to be located between 113 and 130 MHz.

Breakthrough problems with the re-mix filter are not likely to be as great as with the transfer filter.

Substituting a few numbers in equation (6) (from Figure 1), the possible upper limit of the IF receiver, f_{R2}, is 17 MHz. However, f_{R1-2} need only be a minimum of 10% of f_{RF2} (or f_{T2} for that matter) to achieve adequate rejection of the f_R image above the frequency of the transfer filter, even though this image may be located within the TV channel 5A band (the skirts of the transfer filter assist)

Thus, f_B may be around 10 MHz at a minimum.

Several trial runs on paper showed me that a tuning range for the IF receiver of 13 MHz to 11 MHz (remember, reverse tuning) would be an advantage. Firstly, a calibration signal at 12 MHz is available from VNG, aiding construction and calibration of the project — especially if the IF receiver is constructed from the ground up. The other advantage of the 13-11 MHz range for the Wadley-Loop system output was the possibility of easily providing a forward-tuning 28-30 MHz IF output!

I devised a cunning scheme which I shall shortly introduce.

OK, now let's look at a few numbers.

$$f_{bb} = 2 \text{ MHz}$$
$$f_{RF1} = 35 \text{ MHz}, f_{RF2} = 95 \text{ MHz}$$
$$f_{R1} = 11 \text{ MHz}, f_{R2} = 13 \text{ MHz}.$$

I set f_{T2} at 130 MHz, making f_{T1} 128 MHz.

From equation (6),

$$f_B = f_{T2} - f_{R2}$$

and thus,

$$f_B = 117 \text{ MHz}$$

from equation (3),

$$f_{H1} = 165 \text{ MHz}$$

from equation (4),

$$f_{H2} = 233 \text{ MHz}.$$

The harmonic generator will produce spikes every 2 MHz but only harmonics from 48 MHz to 106 MHz inclusive will be required from(equation (5)). Thus,

$$f_{H1} = 48 \text{ MHz and } f_{H2} = 106 \text{ MHz}.$$

TRANSFER FILTER

In practical terms this presents few problems. Several double-tuned circuits will provide the necessary characteristics. Some amplification (possibly with AGC applied) will be necessary between the first and second signal mixers. I have actually constructed a practical circuit for this stage using a dual-gate FET and standard Neosid coil components to provide double-tuned, over-coupled tuned circuits with a 2 MHz bandwidth and acceptable shape factor. Other methods allow a better shape factor and may provide improved performance, but for the application, I would think it unnecessary.

RE-MIX FILTER

Here's where we have to be cunning. First, a reasonable figure for setting error and drift in the band oscillator needs to be decided on. Setting the band oscillator to better than 100 kHz of the required frequency is possible but presents physical problems in the tuning system. Setting it to within 200 kHz or 300 kHz makes the job a whole lot easier.

But achieving a bandwidth of this order at 117 MHz is no mean feat. A cunning trick employed in the FRG-7000 is to heterodyne the output of the pre-mixer (f_B) down to a more convenient frequency (10.7 MHz in the FRG-7000), where a more practical filter provides the required characteristics, and is then re-heterodyned back up to the second injection frequency, f_S. See Figure 3.

Harking back to my thoughts on providing a 28-30 MHz IF output, if I converted the reverse tuning 13-11 MHz range to 28-30 MHz I would require a local oscillator on 41 MHz. Tripling 41 MHz to 123 MHz would allow me to have a heterodyne re-mix filter system with the re-mix on 6 MHz (123 minus 117 equals 6 MHz)!

Thus, I could kill two birds with one stone . . . or one rock, really.

Cunning stunt, eh?

HARMONIC GENERATOR

There are as many ways of doing this as there are harmonics between 2 MHz and 106 MHz. The popular HF Wadley-Loop receivers generally use a diode pump followed by a low pass filter having a cut-off just above the frequency of the highest required harmonic.

For the VHF system, harmonics between 48 and 106 MHz only are required. A simple 2 MHz crystal oscillator driving a diode pump followed by a low pass and high pass filter with cut-offs below 48 MHz and above 107 MHz, respectively, should suffice. You don't want more harmonics than necessary, for obvious reasons.

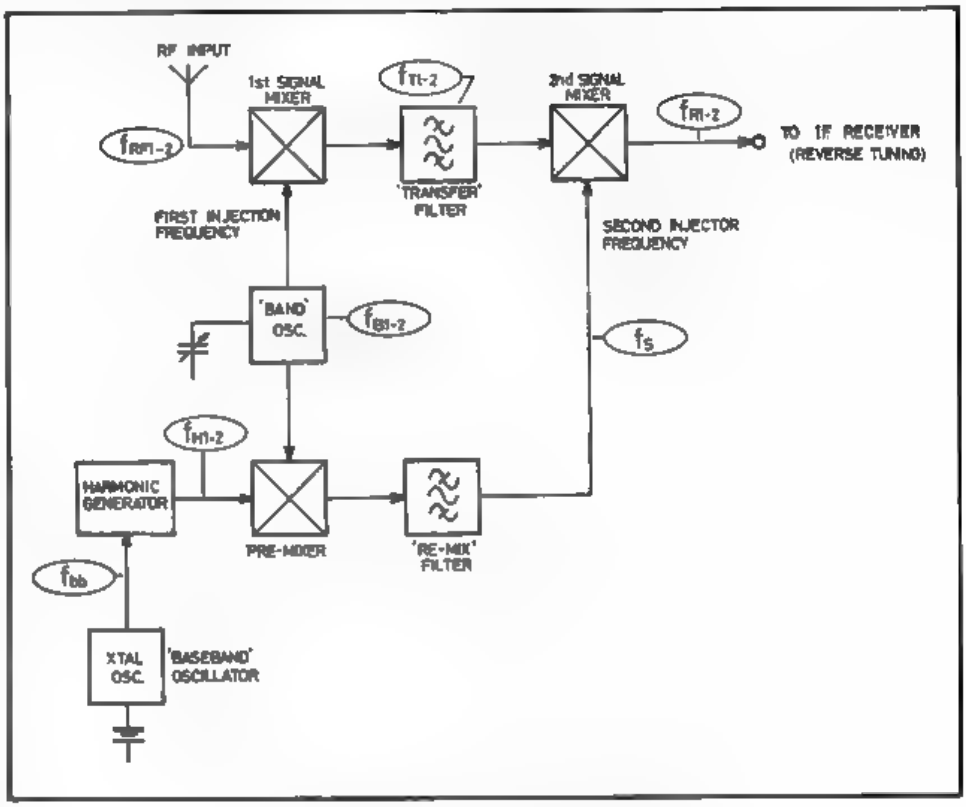

FIGURE 2: Typical HF Wadley Loop front end.

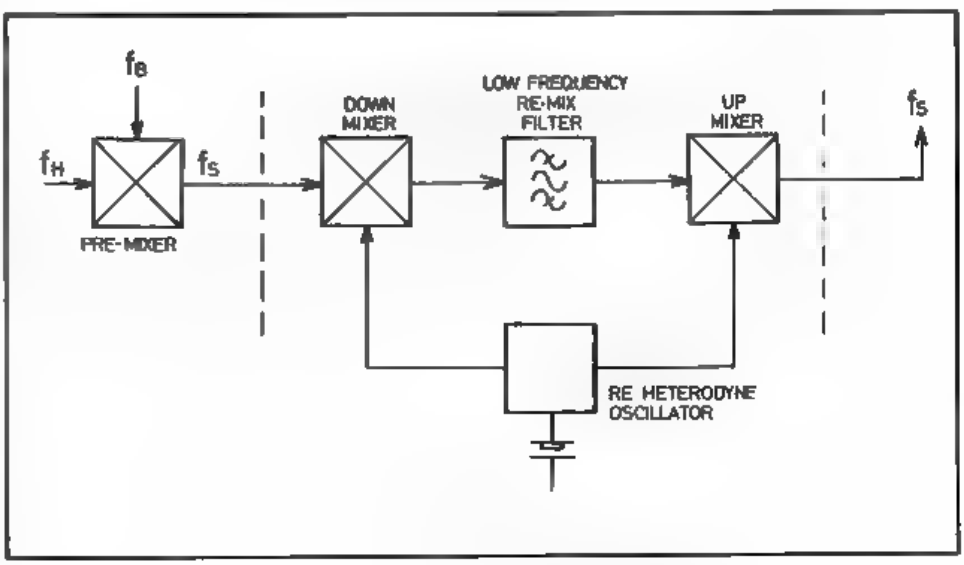

FIGURE 3: The "Heterodyne Re-Mix Filter" System.

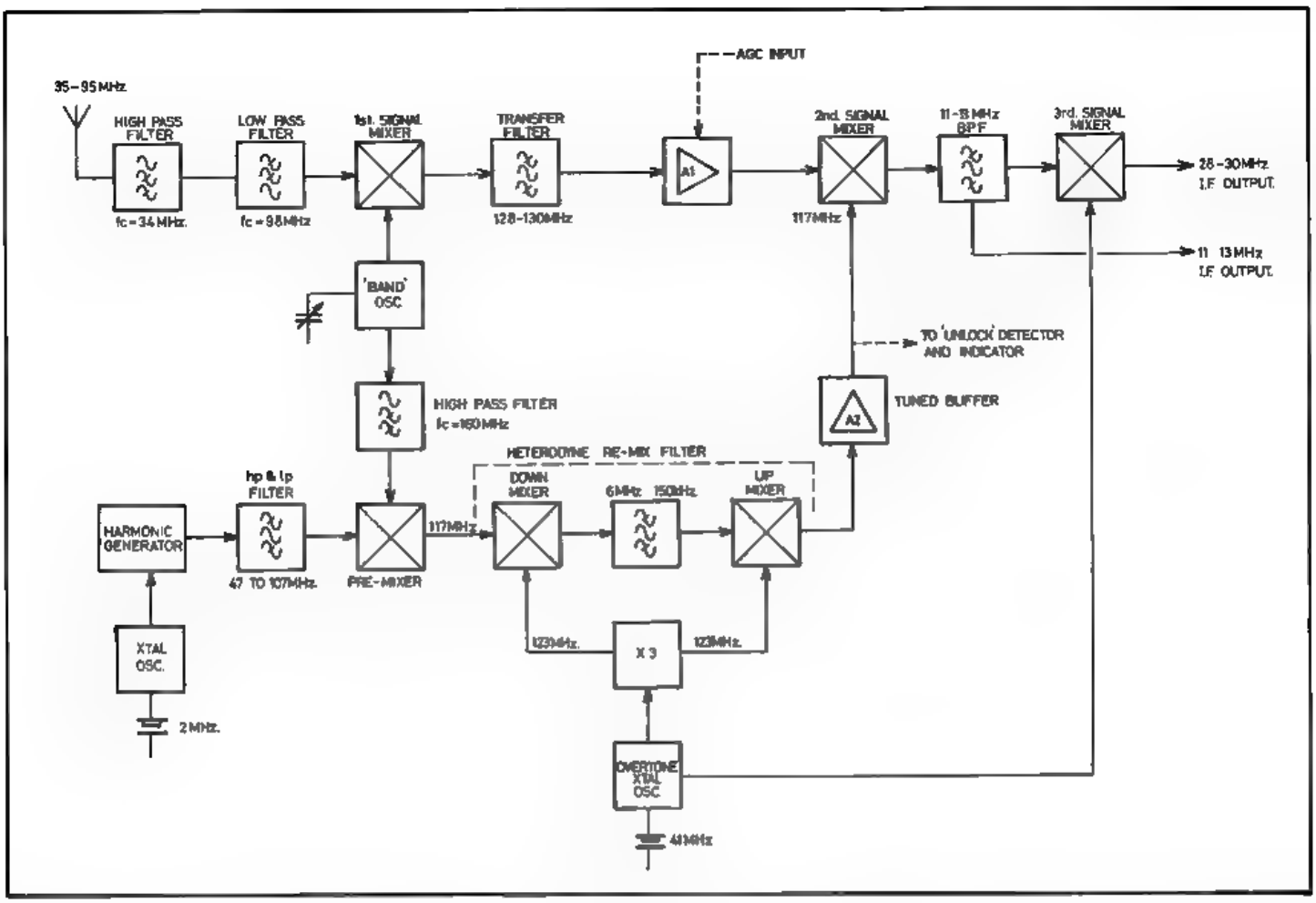

FIGURE 4: Block diagram of the Wadley Loop VHF front end system.

BAND OSCILLATOR

A straightforward Colpitts oscillator will readily cover the required 60 MHz range with adequate stability. Setting accuracy depends on the mechanical reduction of the dial system. Other oscillator configurations are possible, naturally.

Isolation between the first signal mixer and the pre-mixer local oscillator injection ports is necessary and may be provided by a high-pass filter on the input of the pre-mixer. Alternatively, the output of the band oscillator may be fed to the two mixers through a wideband hybrid transformer coupler which would, typically, provide 25-38 dB isolation between output ports, providing effective isolation between the two mixer local oscillator injection ports.

INPUT FILTERING

To avoid breakthrough problems from powerful broadcast signals getting through to the transfer filter, and possible cross-modulation and intermodulation problems on input signals in the 35-95 MHz range from the same source, a low pass filter before the first signal mixer input would be necessary. For similar reasons applying to signals in the HF range below 35 MHz, a high pass filter would assist.

Thus a high pass filter, having a cut-off at, say, 32 or 34 MHz, and a low pass filter with a cut-off at, say, 96 MHz, in series between the antenna and first signal mixer input would be a requirement.

Low noise, high performance mixers are readily available so RF amplification and its attendant problems is not really necessary. An RF amplifier needn't be ruled out though.

A system of switched preamps (a la the tuned preselector in the HF Wadley-Loop receivers) could be considered, each covering a particular portion of the input range.

THE SYSTEM

A final (more or less) block diagram is shown in Figure 4, complete with optional outputs on 13-11 MHz or 28-30 MHz. Note that a tuned buffer follows the up mixer of the heterodyne re-mix filter system. This serves to remove unwanted mixer products and raise the second injection frequency to an adequate level. Secondarily, as is provided on the FRG-7, FRG-7000, etc., an UNLOCK indicator can be added by detecting the presence of f_s at the output of the tuned buffer and using this to extinguish the UNLOCK indicator.

A bandpass filter between the second and third signal mixers is also indicated, its purpose being obvious. It needn't be anything fancy but it should be flat across the 2 MHz range.

CIRCUITS

This is not a construction project . . . I'm not going to give you everything!

Out with the calculator, turn over a clean leaf on the scratch pad and warm up the soldering iron. ■

EQUATIONS

$f_{H1} = f_{R2} + f_{RF1}$ (1)

$f_{H2} = f_{R1} + f_{RF2}$ (2)

$f_{R1} = f_{T2} + f_{RF1}$ (3)

$f_{R2} = f_{T1} + f_{RF2}$ (4)

$f_R = f_{R1} - f_{H1}$ (or $f_{R2} - f_{H2}$) (5)

Conversely:—

$f_{T2} - f_{R2} + f_R$ (or $f_{T1} = f_{R1} + f_R$) (6)

f_{RF1} — lowest signal frequency

f_{RF2} — highest signal frequency

f_{T1} — Transfer filter lower cut-off

f_{T2} — Transfer filter upper cut-off

f_{H1} — lowest freq. of band osc.

f_{H2} — Highest freq. of band osc.

f_R — Re-mix frequency (second injection freq.)

f_{H1} — Lowest required harmonic

f_{H2} — Highest required harmonic

f_{bb} — Base band (i.e., basic tuning range)

In practice, f_R, f_T and f_{bb} are design choices.

FOUR 5/8 WAVE PHASED VERTICAL ARRAY FOR 2 METRES

F. J. Stirk VK2ABC
164 Parr Pde., Beacon Hill 2100

If your QTH is located in a situation such as mine, close up to a hill, with all the action on the other side, you may be interested in the following details of a really low angle radiation antenna.

Beams were out of the question and the thought of increased power unacceptable. The germ of an idea concerning a colinear phased array was sparked into bloom by an article written by Ian Pogson (VK2AXN/T) for EA August 1978. His antenna used two stacked ⅝ λ radiators and he claimed beneficial results over the standard ground plane. There was, however, a problem of feeding the antenna. If fed from the lower end there would inevitably be some lack of electrical balance, but the mechanical stability would be reasonably easy. If fed from the centre, the electrical imbalance would be satisfied, but it would present mechanical problems. The solution as presented may suit your circumstances as it did mine.

The antenna is part of a system and had to fit in with the existing layout. While organising the new antenna the existing mast system was upgraded to benefit both present and future requirements.

Four ⅝ λ radiators are mounted vertically in phase and fed symmetrically in the centre. That is the essence of the system. Without providing complicated graphs and diagrams it can be stated with sufficient authority (see ARRL Antenna Handbook), that the ⅝ λ radiator is about optimum for low angle radiation. Stacking of such radiators, in phase, can only accentuate the low angle and increase the power of the doughnut type radiation pattern. (A gain of some 8 dB should be achieved.—Ed.) The result has been, in this case, to keep the radiated signal almost to ground level, over the hill and, hopefully, far away. The frequency band of interest was from 146 to 147 MHz.

Beyond this range some deterioration may result and the SWR rise from the existing 1.4 : 1. This figure was achieved by adjustment of the coax connection to the ¼ λ centre stub. As it was reasonable, no attempt was made to improve matters by fiddling with the small phasing stubs. The feed line was 50 ohm coax with a bazooka matching section and no problems were involved

CONSTRUCTION

The mast proper consists of two 10 ft. lengths of 3½ in. square timber secured to the fence line for base support, separated by 3 in. to allow fitting the second section, 20 ft. of 2¾ in. square section oregon post. This section had secured to it with bolts a 10 ft. length of 1 in. diameter dowel, close grained and straight. To this dowel is fixed the top elements of the radiator extending some 3 ft. above the dowel. The tip of the top radiator is approximately 30 ft. above ground level and clear of surrounding trees and buildings by at least 15 ft.

Mechanical details of construction are open to suggestion, however, in the writer's case, the radiators are ¼ in. OD HD copper tubing supported to the dowel by insulated screw eyes stood off approximately 1 in. from the timber. Heat shrink PVC tubing is used to further insulate the elements from the screw eyes.

The phasing stubs were made from brass brazing rods and securely soldered to the copper elements. The phasing stubs are bent into approximately 8 in. diameter with the top one secured at the end of a 4 in. x ½ in. dowel stud fixed into the mast dowel.

The ⅛ λ stub and feed point was made from ⅛ in. OD brass rod and formed to fit along the length of ½ in. OD hardwood dowel fitted to the mast at the centre point of the radiators. The two sections of ¼ λ stub were held in position with small paxolin insulating blocks. The end blocks acting as a firm anchor point for the 50 ohm coax feed line.

Support for the lower radiator extending below the 1 in. dowel was provided by 300 ohm TV ribbon stand-off screw hooks with neoprene inserts. These have a longer shank than the screw eyes and cope with greater stand-off distance between the radiator and the mast.

The lower phasing stub was found to be secure enough without any support, and is similarly curved to the upper one, around the mast.

The feed line, 50 ohm coax ¼ in. OD type, was fitted with a balun section and attached to the ends of the ¼ λ stubs secured at the anchor point. The coax line was returned to the mast and clamped for strain relief at one point approximately 2 in. below the antenna centre. It was then fed away to the roof of the dwelling which, fortunately, was approximately just below that level and allowed the coax feeder to be removed from the radiator field in the most direct route.

RESULTS

It is very difficult to be specific with actual dBs of gain in installations surrounded with obstructions and buildings, however the following results may be used for comparison.

The antenna was compared with a

ANT	ANT 1 — ¼ λ Ground Plane	ANT 2 — ⅝ λ Ground Plane	ANT 3 — 4 x ⅝ λ colinear
Feed	50 ohm coax	50 ohm coax	50 ohm coax with balun
SWR	—	1.8 : 1	1.4 : 1
CH 1	—	heard S0.5	S1.5
CH 2	—	—	—
CH 3	heard S0.5	S2.5	S5
CH 4	S2-3	S4-5	S6-7
CH 5	heard unworkable	heard S1	heard S1-2
CH 6	heard	S1	S2.5
CH 7	—	—	S1
CH 8	heard unworkable	S1 workable	S3

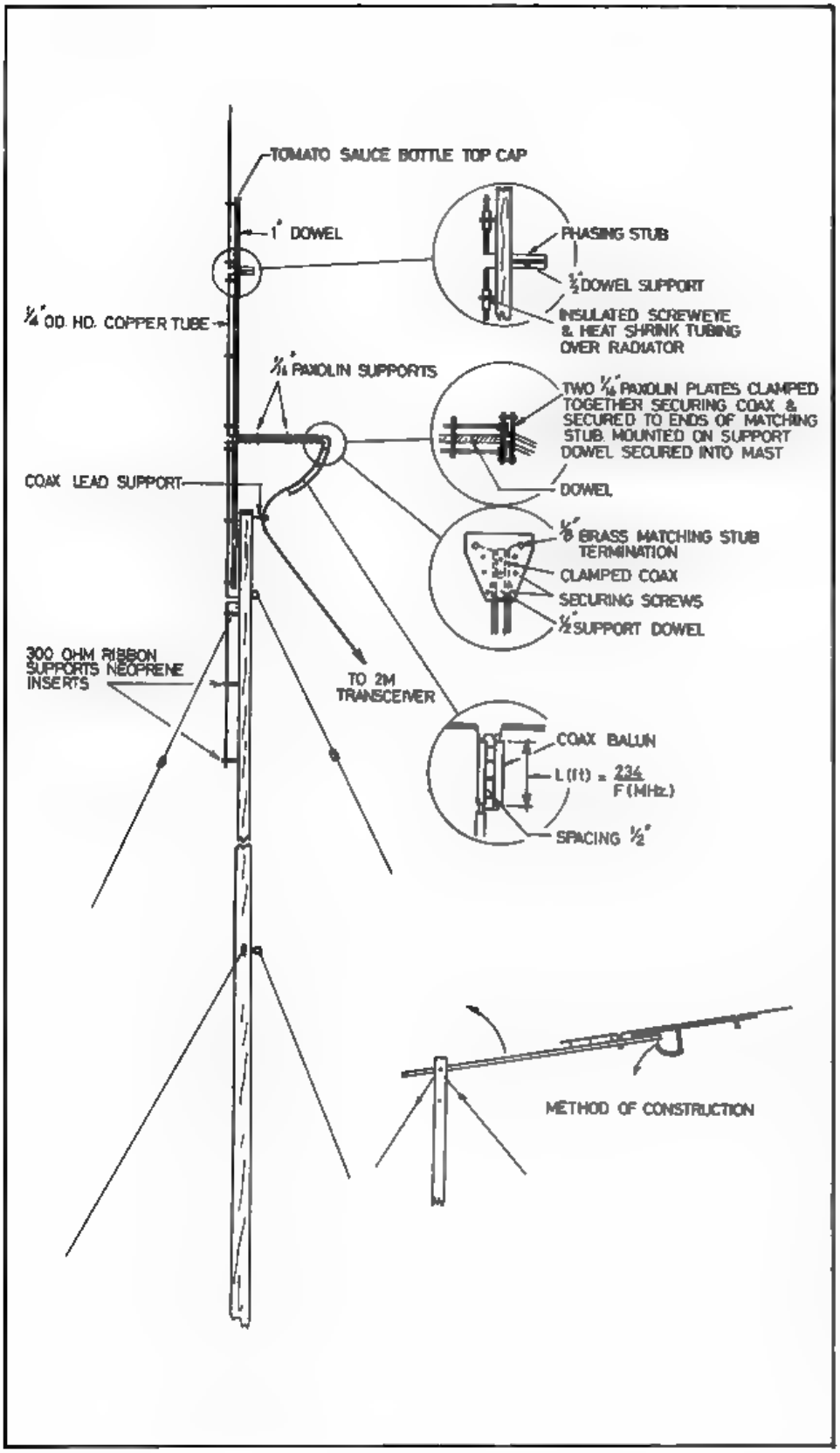

FIGURE 1.

standard ⅝ λ ground plane which is referred to as Ant 2. This was in turn referred to a ¼ λ ground plane (Ant 1). All antennas were well mounted and approximately in the same height and position.

The colinear antenna is referred to as Ant 3.

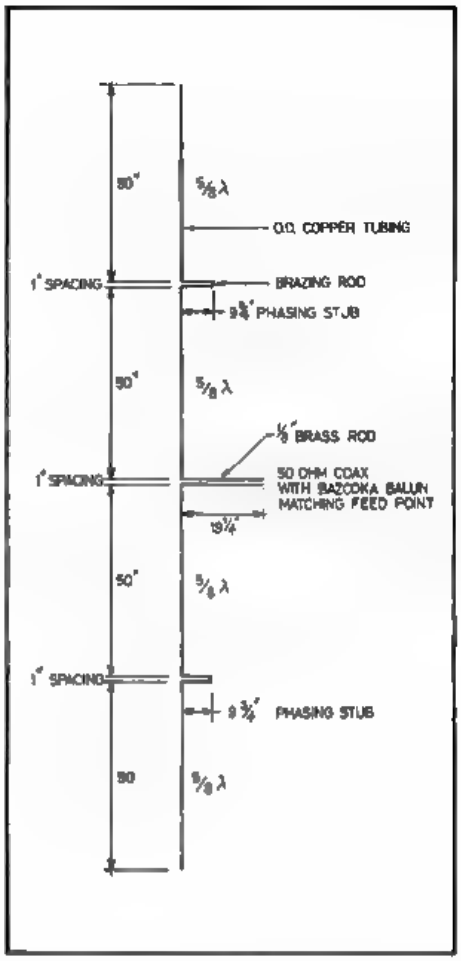

FIGURE 2.

The above chart is indicative of the gain involved which is a combination of lower radiation angle with increased gain, better matching of coax, obvious in slight improvement of SWR.

Results have been very gratifying, enabling stations to be worked under noise free conditions and with greater reliability. Further improvements may be possible with more precise tuning, however the improvement in SWR would not greatly increase the dB gain and frankly is hardly worth the effort. (Adjusting the spacing of the ¼ λ centre stub would help.—Ed.) Increasing the number of antenna elements is also a doubtful proposition since this antenna is almost 17 ft. long. To obtain another 3 dB gain would require doubling the length.

The accompanying drawings generally explain the mechanical set-up without any further words. Give it a try, you will be surprised.

(The coax cable and balun should be weatherproofed and sealed. To ensure many years of trouble free operation it is strongly recommended that all wooden parts of the structure be sealed, undercoated if desired, and given at least two coats of an external type plastic paint.—Ed.) ■

ANOTHER FT101 MODIFICATION

A. Crewther VK3SM
28 Reynolds Pde., Pascoe Vale Sth. 3049

Following the modifications to the FT101B described in "Break In" to improve the AVC range I decided that extra gain could be used in the receiver on the 21 and 28 MHz bands.

Plessey recently introduced an RF amplifier IC type SL1611C giving a gain of 26 dB, 50 dB AVC range and maximum input signal of 250 mV RMS and a bandwidth of 140 MHz. This seemed ideal

A tuned circuit consisting of 7 turns tapped at 3 turns wound on a ½ inch type 4327/R2/F25 toroid in parallel with 100 pF variable condenser gave a tuning range of 14 to 30 MHz. The anntena coil was one turn.

The toroid and all other components were mounted on a small hand drawn printed circuit board (Fig. 2). The holes were punched through the paper on to copper laminate, the required copper area filled in with a felt tipped spirit pen and then etched. The whole board is mounted on the wires from the 100 pF capacitor which is mounted in a small aluminium box fastened to the side of the transceiver.

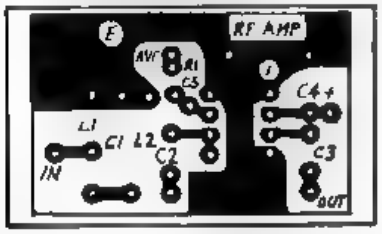

FIG. 2: PC Board Layout.

Modifications required to the FT101 are:

1. Fit a new RCA connector adjacent to J16 (REC).

2. Remove one of the wires off the back of J16 and connect to the new connector.

3. Make a short jumper lead to join J16 and new connector to restore normal operation.

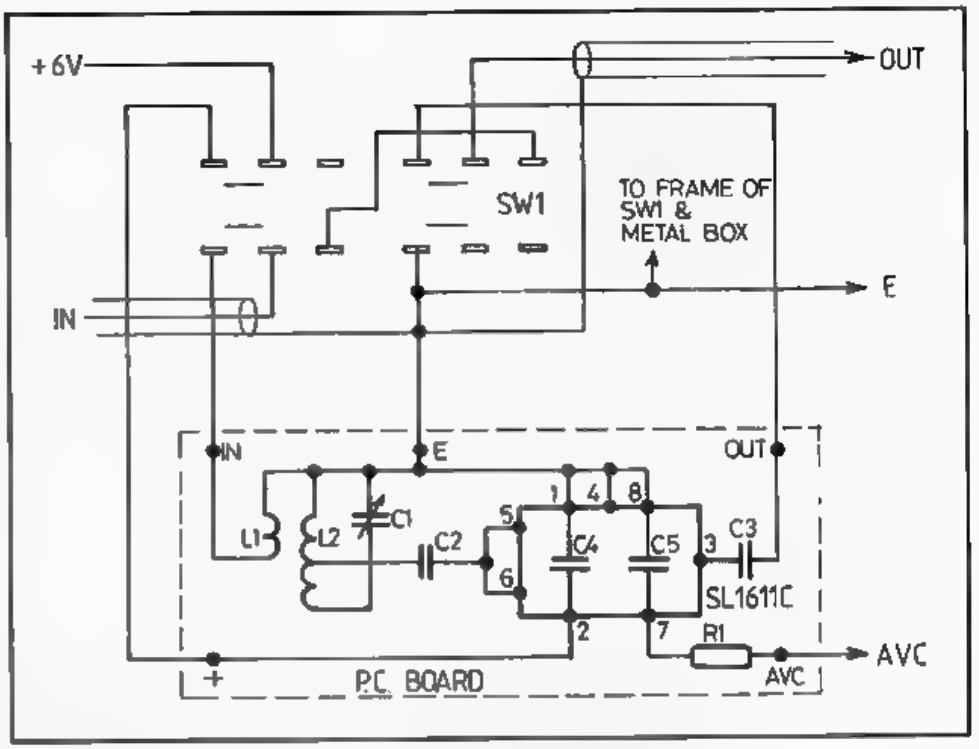

FIG. 1: RF Amplifier Schematic.

R1 100K ¼W.
R1 100k ¼W.
C1 100pF variable.
C2 100pF styro.
C3 100pF styro.
C4 0.1 uF disc.
C5 0.1 uF disc.
SW1 4 pole 2 pos. slide.

4. On the ACC socket lift wire off pin 7 and insulate.

5. Run a new wire from this pin to socket terminal 13 of PB-1314 "REG & CALB UNIT" (6V + Reg).

6. Run a wire from pin 11 of ACC socket (Vacant) to socket terminal 13 of PB-11838 "IF UNIT" (AVC).

The amplifier ON/OFF slide switch wiring (SW1) is critical if the amplifier is to be stable. I recommend the layout as shown in the schematic (Fig. 1). All earths are brought to the one terminal on the switch.

The gain of my unit is one "S" point greater than the 20 dB input attenuator and one weak signal shows a remarkable change in readability.

The SL1611C is obtainable in Melbourne from Telephone Construction C., 108 Bank Street, South Melbourne. ■

Christmas Greetings

The Publications Committee and WIA Executive, on behalf of the Divisions, wish all our readers a Merry Christmas and Prosperous New Year.

☆

A special thanks to all the various contributors who forwarded us articles and snippets to help bring "Amateur Radio" into world-wide acceptance and "number one" in Australia — (VK3UV).

BEAMS NOW MADE IN AUSTRALIA

Roth Jones VK3BG

Australia now has its first full-time amateur radio antenna manufacturing company already making inroads to the once exclusive antenna market from the USA and Japan.

It's here to stay as the word gets around and the signals from these beams are heard all over the country.

Here's the story which makes me feel proud to be Australian.

Amtenna Co. Ltd was formed in mid-1978. Its first antennas, a 10-15 metre dual band beam and a four-band trapped vertical, appeared on the market in late November

Sceptical at first, believing the heavily-advertised imported antennas were the ultimate, the amateur radio enthusiasts were hesitant to buy.

Once a few were sold and the hefty signals started up on the 10 and 15 metre band it was a popular topic of conversation on all the bands.

The orders which followed were far beyond the wildest dreams of the two young amateur radio enthusiasts who started the company . . . Tony Owen VK3NCC, a former civil and radio engineer with a flair for antenna design and construction, and Fred Swart VK3NBI, of Chirnside Electronics, one of the best radio servicemen and salesmen in the business.

Amtenna Co. Ltd. has kicked its first goal . . . to establish itself and be accepted. The next, already under way, is to expand into the tri-bander, multi-band doublet and VHF antennas.

The company's first duo-bander, the AM4-2, is already on the air and making itself heard from a number of experienced DX operators and young novices.

Reports being received from these duo-banders indicated they are up there with the best antennas from Japan and the USA.

Fred and Tony claim their antennas are far ahead in construction and are built to withstand tougher weather and storms. They are predicting a life of at least ten years, if not more

The history of this tiny company, the devotion and dedication of these two men is one of the success stories of amateur radio in Australia.

Rightly they kept their planning to themselves and didn't announce their products until they had been proven. This is now history, but let's put the calendar back and recall those hectic six months and the men who made a project a reality.

Fred became interested in amateur radio eight years ago, although, since a boy, he had been intrigued with electronic gadgets, stereo and hi-fi.

Once he had mastered the elementary theory of radio he began studying electronics seriously and soon joined the communications department of Phillips TMC for five years, gaining experience which would prove invaluable to him for the years to come.

Three years ago he joined Bail Electronic Services where he gained more experience in amateur radio servicing, sales, importing and after-sales service, a field which he claims he has specialised in since branching out on his own 12 months ago.

The frustrations of importing worried him as he thought how wonderful it would be if Australia were to have its local amateur radio industry like the USA, Japan and the UK.

He thought of manufacturing transceivers, but this would be economically impossible due to the large numbers necessary to make the price competitive, but antennas were a different story.

"I knew all the time there was money to be made in this field, and one day when the time was right, I would make the move," Fred recalled last month.

The dream came true last year when there was a slump in the antenna importing business due to Hy-Gain ceasing production, supplies became erratic and prices soared.

It was like the proverb of the wise ancient Greek — When one door closes look for the other that's just starting to open.

• Roth Jones VK3BG is one of Australia's best known journalists having covered most major stories in more than 30 years of journalism. He has visited more than 60 countries in peaceful and turbulent times. Rarely does he write on amateur radio, yet he has never been off the air since the mid-1930s except for war service with the Royal Australian Air Force. When he heard this story of two VKs who successfully started an antenna manufacturing company he said he could not resist writing it exclusively for Amateur Radio.

The AM 4-2 duo-bander up in the air.

And this is just what Fred did. Waiting at the opening with similar ideas, and a good friend over many years, was *Tony Owen*, who had just resigned from the management of a civil engineering company to "go it alone".

They pooled their ideas and were in agreement on all. Like a maiden handicap down the straight at Flemington they were both quick off the mark and already they could see the finishing post.

It was a short, but not an easy race. They made it all right well ahead of the field.

Overnight Amtenna Co. Ltd. was registered with Tony as managing director and Fred looking after all sales.

Like any good engineer, Tony started planning and tooling up while Fred looked at the marketing, the sales potential, his advertising and how they would break into and take a share of an already established antenna market.

As Tony recalled last month:

"We both worked long, hard hours designing and testing into dummy loads and on the air. We spent more than 100 hours researching plastics before we settled for products suitable for radio frequencies with high moulding temperatures and good in ultraviolet light.

"Traps were made up and tested for strength, stability and reliability.

"After three months of solid hard work and more testing of front-to-back ratios, side rejection, etc., the AM4-2 was born," said Tony.

"The very rugged, low-priced duo-band beam is proving very popular and orders are increasing every month," said Fred.

Many more hours of work and much money later the 80-10m trapped vertical was perfected. This is selling at less than $100 complete with radials. Then came the tri-bander which consumed more time than predicted.

It had to be deferred temporarily due to the mounting orders for the duo-bander, but Tony is hopeful of commencing construction on these before the winter.

Tony and Fred have based their business on the well-established three aims of *service, quality and price* and in that order.

Now the company is established it seems certain more and more of these antennas will be pushing out hefty signals all over Australia as interstate representatives have already been appointed.

Like any other success story this one had more than its share of bad chapters. The worst was when they asked themselves "Is it really worth it?" when the response to the first ads in the radio journals was a flop.

But that alone was not to worry them. Instead it spurred them on. Soon a few Melbourne novices bought them to *"give them a go"*.

They had, at last, conquered the biggest barrier which they were unaware had existed — the belief held by so many Australians in all walks of life that imported goods be they wine, fashion, cars or electronics are better than the Australian-made product.

They had conquered the big one. They had been accepted because their product had proved itself and was better-priced than the imported ones.

"How silly is it for people to be blindfolded by fancy names and the fact that it was imported," Fred recalled to me over a cup of tea last month.

Recently they placed their AM4-2 alongside an imported equivalent and were convinced beyond all doubts the ruggedness of their traps was far superior to the imported sample.

Performance is hard to compare, but they genuinely believe their antenna is as good, if not better in forward gain, front to back than the importeds.

The rest of this story is history. As more antennas were sold the unsolicited compliments came in, proof if there ever was one, that they were on a winner

Naturally there was the odd complaint but this, they say, was due to the initial rush and enthusiasm and was personally corrected.

Packing facilities have been improved and new easy-to-follow instructions prepared. The whole operation has become as professional as a prize fighter.

According to Tony the AM4-2 is one of the easiest and quickest antennas to assemble on the Australian market.

The Colour coding is so simple instructions are almost unnecessary.

This final comment by Tony and Fred seems to sum up the whole operation — "We receive many compliments now which we appreciate after our struggle.

"We will now streamline production and turn out more and better antennas quicker with quality utmost in our minds.

"Then we'll start exporting and Australia will have a new local and International industry it will have reason to be proud of."

This has been a success story because two men set themselves a goal and worked through almost insurmountable difficulties to achieve it.

They won through because they didn't give up and that's what life is all about.

Success comes to those who work for it . . . and it's a great feeling. ■

WATCH IT — THIS COULD BE YOU

Confirmed lifelong DX fanatic departs this world, finds himself in Hades being interviewed by Satan. Opening the conversation, Satan said: "People on Earth like to believe that this is a terrible place, but that really isn't so. Here you can have anything you like — girls, grog, sports cars, anything at all. What is your wish?" The DXer was astounded, but quickly regained his equilibrium. "Well," quoth he, "my only real interest for most of my life has been working DX on Amateur Radio. The thing I always wanted and could never have was a 300 foot tower, complete with perfectly matched high gain beams to cover all bands. The beams would be fed with zero loss coax. cables through the perfect coax switch. I dont 'suppose that would be possible here?" Satan gave a little smile, and said: "No worries, OM — here all things are possible. We'll fix that in a flash!" — which he did. Puff of smoke, and there stood the DXer's dream complete to the last detail, even including the rotators he'd forgotten to ask for. Completely flabbergasted, the DXer tried to stammer out his gratitude, but Satan cut him short. "Look, mate," said Satan, "that whopping great array is no good to you without some gear to go with it. What would you like? Name it, and it's yours." Having somewhat regained his poise by this time, our DXer thought deeply into all the catalogues and reviews he'd ever read — and proceeded to name every piece of gear, regardless of price, that he'd ever drooled over. Satan listened carefully and, when the list reached its end, smiled and said: "No problems there — we'll fix that in a flash!" Puff of smoke, and every single piece of gear nominated appeared — absolutely brand new. Not only that, every single piece was tailored into the most beautiful operating console ever seen. "Though you'd like the job finished properly," said Satan, "what do you reckon?" The DXer inspected Satan's hand work carefully and, after making his thanks, said: "Crikey, I can't wait to get on air and tell the fellows back there how good Hades really is. But tell me, Satan, what is that great cable hanging out of the back of the console?" Satan looked where he pointed, and said. "Oh, that's the power cord for all the gear."

"Right," said the DXer, "let's plug it in and I'll get cracking." Satan looked at him, smiled and said: "Sorry to tell you this, old chap, but we don't have any power down here!"

Reproduced from Smoke Signals, June 1979. ■

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Frequency Range:

160 Meter Band	1 8- 2 4 MHz*
80 Meter Band	3.0- 4 5 MHz
40 Meter Band	6 0- 8 3 MHz
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15 Meter Band	20 8-23 0 MHz
10 Meter Band	28 0-30 0 MHz**

*Model 151 only
**Model 150 only

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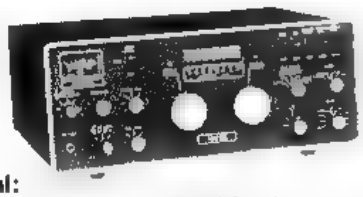
Mode	CW, CWN, LSB, USB CW Break-in, Full and Semi
RF Input Power:	235 watts all modes, all bands
Carrier Suppression:	Better than 50 dB
Side Band Suppression:	Better than 60 dB
Microphone:	47 K ohms with push button tuning
AF Response:	300 to 3000 Hz

P.O.A.

Performance Specifications

Spurious Radiation.	Harmonics >45dB below peak power Other >55dB below peak power
Receiver Sensitivity:	10 dB $\frac{S+N}{N}$ or better at 35μV
Image Ratio:	Better than 60 dB
Frequency Stability: ...	10 Hz/Hr after warm-up
Receiver Selectivity	SSB & CW 2 7 KHz (8 pole filter) Shape Factor 1 6.1 CWN 300Hz (Xtal)
Audio Output Power:	Greater than 3 watts into 4 ohms
Power Requirements: ..	13.8 VDC @ 18A peak (Xmit)

ASTRO 102BX Performance Specifications



P.O.A.

THE OLD BIRD WITH NEW "FEATHERS"

General:

Frequency Range* ..... 160M Band ..... 1.8-2.0 MHz
80M Band . ..... 3.5-4.0 MHz
40M Band ..... 7.0-7.5 MHz
20M Band . ..... 14.0-14.5 MHz
15M Band ..... 21.0-21.5 MHz
10M Band . . 28.0-29.999 MHz

*approximate 50 to 100 KHz overrange on each band

Readout.	5 x digit LED from internal counter
Frequency Stability:	Within 100Hz during any 30 minute period after warm up
Power Requirements.	13.6VDC (11 to 15VDC range) at 1 8 amp receive, 19 amp peak transmit

Transmitter:

RF Input Power . ..	235 Watts all modes all bands
RF Output Power:	100 Watts all bands - limited by ALC to 100 Watt output PEP or CW
VSWR Shutdown:	Full power up to VSWR = 1 7 1 Approximate limit ratio as follows VSWR Percent Power 1.5 100% 2 0 80% 3.0 60% ∞ 25%
Carrier Suppression:	Better than 50dB
Sideband Suppression:	Better than 60dB
Spurious Radiation:	Harmonics >45dB below peak power Other >55dB below peak power
Audio frequency Response:	300-3000Hz
Microphone Impedance.	47K ohms
Receiver Sensitivity:	10dB $\frac{S+N}{N}$ Typ at 35 uV
Image Rejection:	Better than 60 dB
Receiver Selectivity:	SSB and CW - 2 7 KHz bandwidth, two 8-pole crystal filters with shape factor 1 4, 6dB to 100dB CWN 300 Hz bandwidth IF crystal filter in series with one 8-pole SSB filter
Bandpass Tuning.	SSB and CW eight-pole cut-off continuously variable highpass or lowpass. LED readout shows approximate audio bandpass CWN IF crystal filter continuously tunable over 300-3000Hz with passband control
Dynamic Range: . .	AGC greater than 100dB Third order intercept + 15 dBm
Audio Output Power:	Greater than 3Watts into 4 ohms

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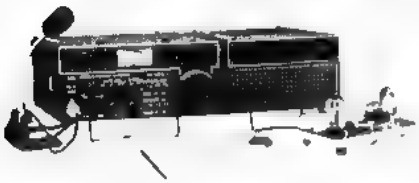

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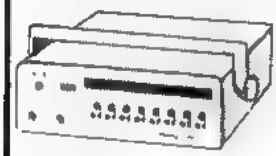

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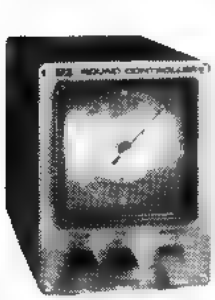

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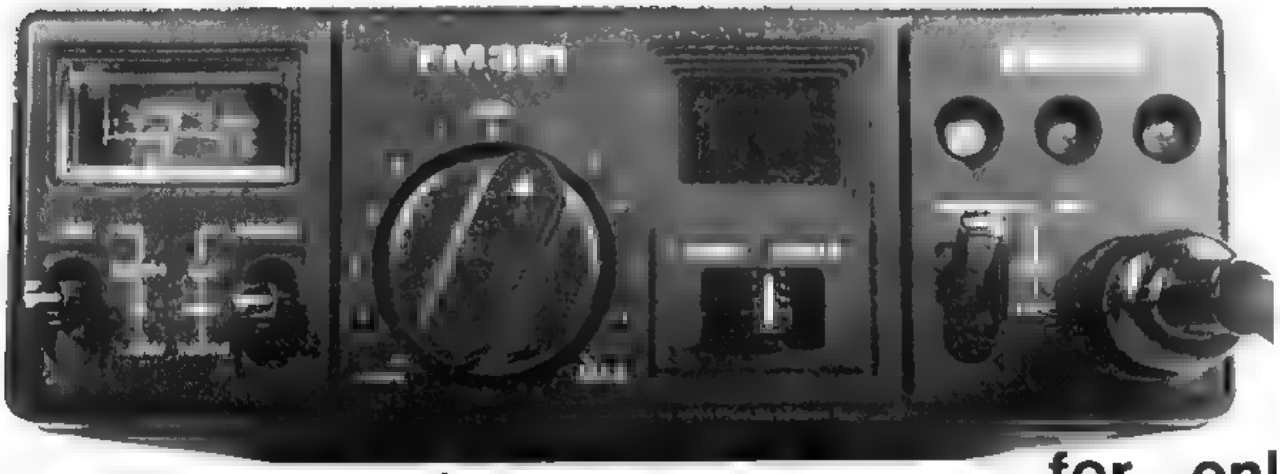

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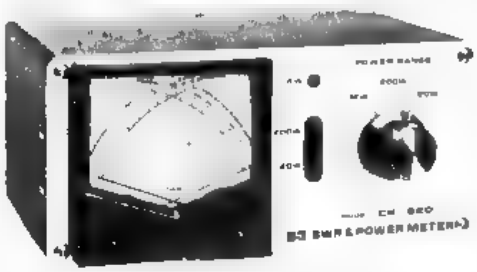

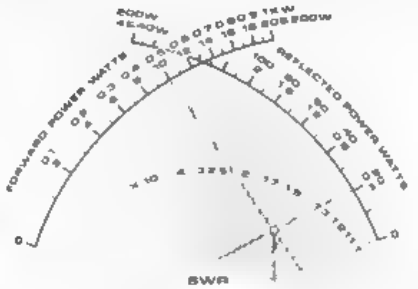

SPECIFICATIONS

Frequency: 1.8—150 MHz
Input, output impedance: 50 ohms
Ratio of Forward vs Reflected power: 5 : 1
Power range: Forward 20W 200W 1kW
Reflected 4W 40W 200W
INPUT RATING POWER
HF BAND: 1kW CW (2kW PEP)
50 MHz BAND: 500W CW (1kW PEP)
150 MHz BAND: 250W CW (500W PEP)
Tolerance: ± 10% at full scale
SWR measurement: 1 : 1—1 : ∞
SWR detection sensitivity: 5W min.
Input, output connectors: SO-239
Dimensions: 165W x 75H x 97Dmm

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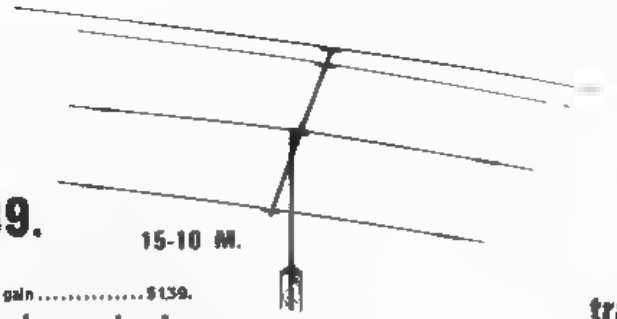

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REVIEW THE IC551D SIX METRE 100 WATT TRANSCEIVER

Reviewed by Gil Sones VK3AUI
Test figures courtesy Kevin Phillips VK3AUQ

The IC551D is a new six metre transceiver. It is a high power version of the recently released IC551.

The packaging and styling is like the IC701 and the IC211, however the IC551 and the IC551D have inbuilt microprocessor control. In previous rigs this could only be provided by the remote controller.

The microprocessor sorts out the signals from the knobs and switches and controls the dial display and the phase locked loop frequency control.

With all such arrangements you should always remember that the display is not an actual counter output. ICOM recognise this and provide an accessory marker. In Melbourne this is not necessary as you may check calibration on a harmonic of VNG. Yes, even Telecom have harmonics.

The unit tested was not fitted with FM as the FM unit is sold as an accessory overseas. They will be fitted to later shipments and may be retrofitted to units without them. This is very simple, as many of the features are in bolt-in, plug-in modules.

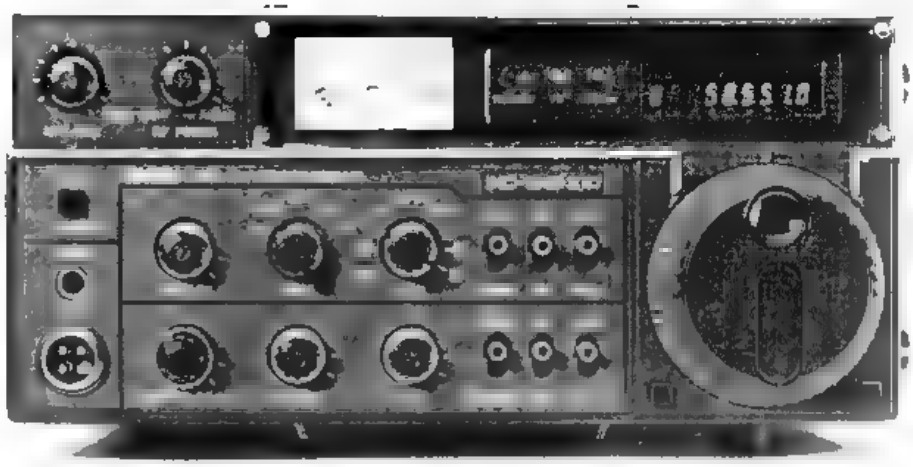
The VOX is very interesting as it uses a bucket brigade delay line to eliminate the clipping of the first syllable. This is a very advanced feature and is indicative of the thought and development ICOM put into their equipment. The circuit is similar to the circuit AR readers have seen in Evan VK3ANI's VOX Advance.

Another feature not often seen on VHF equipment is Pass-band Tuning. This can be quite handy for dodging annoying Channel 0 sidebands when listening for beacons.

Together with the Pass-band Tuning ICOM have provided an RF processor which helps greatly under weak signal conditions. The reviewer was able to use this to great advantage when working tropospheric DX. Under such conditions the extra punch provided by the processor helps considerably.

One of the advantages of having a built-in microprocessor is the number of VFOs and memories which may be provided. In this context VFO is probably a misnomer as the VFO function is really achieved by a variable memory storage. There are two such VFOs provided together with three memories.

Facilities are provided to transceive on either VFO or any memory. Split frequency operation may be achieved using either VFO for receiver transmit. This can be a very handy feature for DX working. You can also align VFO B with VFO A by a flick of a switch.

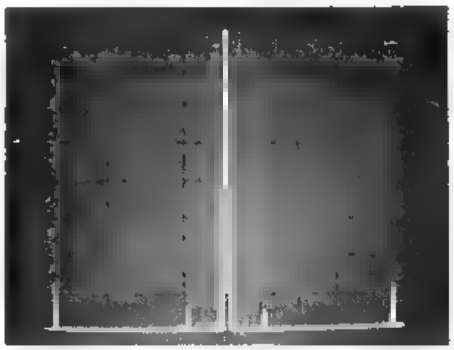


The IC551D

Scanning is provided by any of the three memory frequencies or between two of the memory frequencies. This can be very useful for monitoring beacons or to search for signals in a band segment. The scanner stops when a signal exceeds the squelch threshold.

The squelch is operated from the AGC line in the SSB and CW modes and for FM it is the normal FM squelch or mute. The squelch is triggered by minute AGC voltage and is a considerable operating convenience. It was not possible to test it in the very subjective threshold between just hearing weak signals and imagining you are. Band conditions did not oblige in this area.

The power supply type IC S20 is interesting in that it uses a high frequency DC to DC converter to convert the rectified mains voltage to 13.8 volts DC. This results in a much lighter power supply at the expense of some extra complication of circuitry. The shielding is good and the power supply does not radiate noticeable RFI. However, don't sit your transistor radio next to the transceiver front panel as the microprocessor and display radiate for a few inches near the panel.



IC551D, spurious outputs, HP spectrum analyser, frequency 52.05 MHz CW 2 MHz/div. horiz., 30 kHz bandwidth, 10 dB/div. vert.

A similar power supply is built into the IC551 which is the 10 watt output version.

One interesting point in the power supply is the use of Swedish Interference suppression capacitors. Evidently ICOM wanted quality components and were prepared to search for them. This is an indication of the engineering design effort that ICOM put into their gear.

Another interesting point is the extent to which ICOM have developed and refined the VXO or rubber rock. In this rig

there are three such oscillators and they are stable. A great deal of design effort has evidently been put into this development.

On the air the IC551D draws compliments for the quality of the signal and the receiver digs out the weak signals. During the test period the band obliged with a tropospheric opening and with an opening to Japan. The IC551D performed admirably in both instances.

Another area the IC551D shines in is cross modulation performance which is most critical in a Channel 0 area. When tested, using a KLM 11 element beam, with line of sight to Channel 0 15 km away, the IC551D was able to read signals which were unreadable on a couple of other 6 metre rigs. This is a pretty severe test as previously at this location it had not been possible to point the beam close to Channel 0. A very big plus feature in any area plagued by Channel 0.

One difference between the IC551 and the IC551D other than the power output is in the retention of the memory when the rig is switched off. The IC551 has a power supply built in which may be used to retain the memeory whilst the IC551D merely has the provision for an accessory power supply to perform this function. The result of this is that at switch-on the VFOs and the memory are initialised out of the Australian Band. To get back up to 52 MHz is quite a chore even when using the fast tune position with 1 kHz steps. There is, however, a neat way to get 10 kHz steps by selecting the FM mode. Select FM, give the knob a couple of turns and then switch back to SSB.

The receiver sensitivity was found to be 0.09 microvolt for a 10 dB signal plus noise to noise ratio. A little bit better sensitivity is obtainable by using the Passband Tuning to narrow up the IF selectivity. This would only really apply to CW signals.

The transmitter produced 96 watts which is somewhat better than the 80 watts in the handbook or the 50 watts promised on the box. The power was all on the one frequency, too, as the spectrum analyser photo shows, with spurious outputs being in the region of 65 dB below full output. This is better than the specification of 60 dB down.

The frequency displayed was found to be accurate to better than the dial display accuracy. This is a tribute to ICOM's excellent oscillator design and would be hard to better.

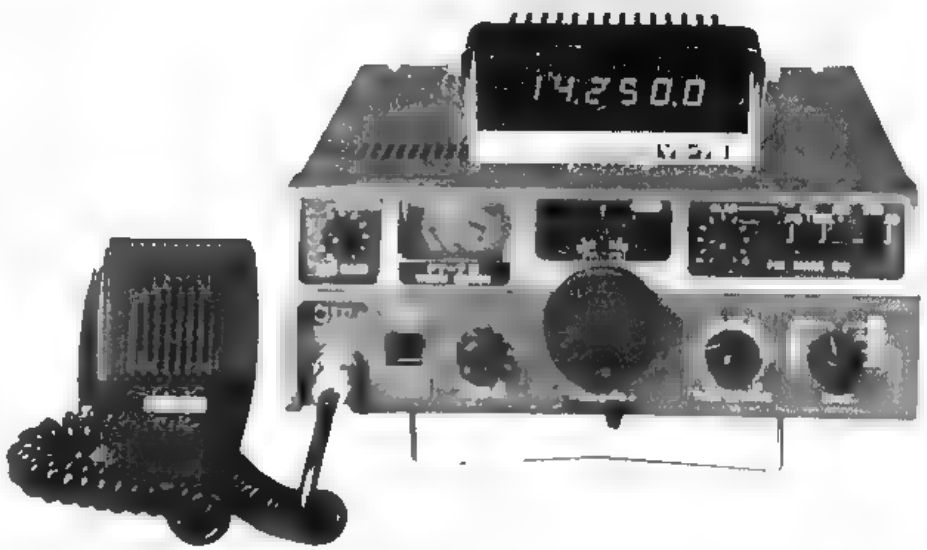
All things considered, the IC551D is a very well engineered 6 metre rig.

Enquiries regarding supply and price of the IC551D should be directed to VICOM and their distributors. ■

REVIEW

OPERATOR'S REPORT THE YAESU FT-7B

The FT-7 is a Yaesu transceiver well known to most readers. Until recently it was available at the bargain price of $389. Now the FT-7B is available. This article reviews the FT-7B and compares it with the FT-7.



The Yaesu FT-7B

GENERAL

The FT-7B is a small compact rig of about the same size as the older FT75/FT75B series. It uses the same case as the FT7 and is only 30 mm deeper due to the addition of an external heatsink for the larger PA. The transceiver runs a nominal 100W input, is completely solid state and does not require adjustment of tune and load controls as do rigs with valve PAs. The receiver is almost identical to the FT-7 and is therefore very sensitive and provides a generous 3W of audio to cope with the usual background noise when mobile. The operator has the choice of AM as well as CW and SSB operation.

TECHNICAL FEATURES

The transceiver operates on the 80 through 10m bands. Unlike the FT-7 a full 2 MHz coverage is provided for 10m. The VFO is tuned by a large centrally placed knob and covers 500 kHz. The scale has 1 kHz divisions. Once calibrated the readout error is less than 1 kHz. One revolution of the tuning knob covers 16 kHz. A 100 kHz calibration signal, derived from a 12.8 MHz crystal, is provided. Both receiver and transmitter use fixed and tunable bandpass circuits at signal frequencies. Both the receiver RF amplifier and PA driver circuits are peaked by a single knob labelled TUNE.

A clarifier is provided to allow reception of signals up to 3 kHz either side of the transmitted signal.

As with the FT-7 semi-break-in CW operation with sidetone is provided. An audio filter has been added and this is a worthwhile feature for CW reception, as it has a nominal 80 Hz bandwidth.

Although the FT-7 could be used with an external VFO this option is not available with the FT-7B but has been replaced by the ability to use the YC-7B remote digital display of frequency. This display can be mounted in a more convenient position for the mobile operator than under the dash with the transceiver.

The RF drive is adjustable, an important feature for AM operation and for the Novice CW operator. An effective noise blanker is provided and another feature not found in the FT-7, a 20 dB RF attenuator, has been added. Although the power rating has been increased by a factor of five and many features added, the weight has increased by only 0.5 kg. It appears that there was a little room left in the FT-7, after all.

CIRCUIT DESCRIPTION

The incoming signal passes through a tuned circuit and is amplified by a dual gate MOS FET which has AGC applied. The amplified signal passes through a bandpass filter and a buffer amplifier to a balanced mixer using Schottky barrier diodes. This gives excellent sensitivity and a low noise figure, most noticeable on 10m, and a high degree of freedom from cross-modulation. The IF is at 9 MHz and the mixer output is coupled to a monolithic filter to give some modest selectivity before passing through an amplifier and a diode noise gate. An 8 pole crystal filter is used to obtain excellent selectivity. The selectivity figures claimed are the same as claimed for most modern transceivers available in Australia, namely 2.4 kHz at —6 dB and 4.0 kHz at —60 dB. Further amplification follows before the signal is detected by a ring demodulator and then passed to the audio stages. An IC provides up to 3W output into a 4 ohm speaker.

For CW reception the audio filter is switched in to give an 80 Hz bandwidth at —6 dB. The centre frequency can be adjusted once the cover has been removed.

There are several unusual features. For example, the noise blanker has a separate mixer and a 455 kHz IF coupled from the output of the main mixer prior to the first filter. There are no adjustments for threshold level, however the blanker was found to work well in both base and mobile situations. The marker generator uses a single IC to divide the 12.8 MHz crystal oscillator signal down to 100 kHz. Coupling to the antenna terminal is via a diode switch. Almost all the RF signals are diode switched, a notable exception being the antenna changeover, which uses a relay.

The VFO tunes 5.0 to 5.5 MHz and the adjustment for calibration is done with a varicap diode controlled by a lever control situated below the main tuning knob. Except on 80m the VFO is premixed with a crystal oscillator before being applied to the Schottky diode balanced mixer. This mixer, along with the filter and part of the IF amplifier, are used for both transmitting and receiving.

For SSB transmission a single IC amplifies the microphone output and drives a diode ring modulator. The resulting 9 MHz signal is amplified, passed through the crystal filter and on to the Schottky diode mixer. After amplification by a dual gate MOS FET, at what is now the signal frequency, the signal passes through the same bandpass filter used in the receiver to a broad-band pre-driven amplifier. This is coupled through a tunable LC network to the PA.

The PA consists of 4 RF transistors operating in a broad-band circuit to produce a nominal 50 watts out. The two output transistors operate in class B in a push-pull circuit using broad-band transformer coupling. Negative feedback is used for the three stage amplifier to reduce distortion. Thermal run-away is prevented by bias diodes mounted on the PA transistors. Harmonic output is reduced by means of a low-pass filter, one for each band, selected by the band-change switch.

A frequency independent directional coupler is used to sense both forward and reflected power. The forward power is used to provide ALC operation and prevents the output being pushed beyond limits. The ALC is inhibited from operating until the output reaches a pre-set level in excess of 50 watts. Any attempt to increase power beyond this level causes the IF gain to be reduced. When the transmitter operates into a mismatched load the reverse power also causes the gain and hence the output to be reduced. The reduction is negligible for a VSWR of 1.5 : 1 but reaches 50 per cent at 2 : 1 and the output is reduced to 20 per cent at 3 : 1. A separate ALC circuit is used for AM operation. This uses a simple diode voltage-doubler circuit and is followed by an additional PI filter for harmonic suppression.

Most of the circuitry is easy to follow and the majority of the components are fitted to 14 plug-in PC boards. This should make servicing very easy. The instruction manual supplied is adequate with clear print and diagrams, although care is needed when tracing interconnections on the main circuit diagram. A total of 86 transistors, 83 diodes and 7 ICs are fitted inside this little rig. A modification is available to provide operation at Novice power levels.

ON AIR TESTS

The receiver showed itself to be very sensitive and was noticeably better on 28 MHz than a FTDX401, which was used as a standard for comparison. The immunity to cross-modulation seemed to be the same. The unit tested showed a maximum dial error of 300 Hz when checked at five 100 kHz points. The calibrator signals were consistently strong on all bands. Power output was measured at about 60 watts on all bands, for a 13.5 volt supply.

The CW sidetone level was too loud and when the case was opened the adjustment was found to be fully up. It was a simple matter to reset it; it seems to be factory policy to set it right up. Incidentally, as with the FT-7, the covers fit very tightly and need assistance in removal.

There is a generous amount of microphone gain resulting in considerable compression due to ALC action. An input in excess of 130 watts was recorded.

The rig appears to be built for the installation on the operator's right (left hand drive vehicles), as the gain controls and microphone are on the left. Otherwise the controls are well laid out and easy to use and precise in action.

For mobile tests the rig was coupled via an ATU to a 28 MHz whip and operated on 28 MHz. For tune-up the rig was switched to CW and the input set to about 10 watts until the ATU adjustments were completed. Briefly the set performed well and in known poor locations the extra power over the FT-7 was a great asset. Tests were run with both fixed and mobile stations in the Melbourne area. Performance was excellent even in heavy traffic where the noise blanker proved to be quite adequate.

More extensive tests were carried out in the quiet of the shack using the set as a base. An inverted trapped dipole was used on 40 and 80m and a TH6DX for the other three bands. Band conditions were only fair yet three lengthy QSOs were easily held with ZS stations on 15m. All three ZS stations were running 200 to 300W out and gave reports that varied from 1 S unit less to 1 S unit more than the reading on the FT-7B's meter. Shortly after an 0E8 using an FT301D was worked with 5 x 7 both ways. Nine European stations were worked on 28 MHz and reports up to S8 were obtained. A number of other stations were contacted on other bands. In all cases the reports were complementary and under weak signal conditions the reports were better than might be expected for a 100 watt rig. The recovered audio was of good quality, very good in fact, when the size of the inbuilt speaker is considered.

CONCLUSIONS

The FT-7B is a fine, compact rig. It does not have some of the features of the top-of-the-line sets, for example there is no speech processing. It is of course only half the price of these sets and if desired these facilities can often be added externally. The extra power over the FT-7 is most useful and makes the rig useful for serious DX work. The current drain is modest and allows for extended operation from a stationary vehicle without the fear of a long walk home.

It represents good value for money and appears to have serious competition in the market only from the TS120S. It is a rig worthy of consideration whether it is to be your first rig or whether you are trading in your old FT200. The FT-7B gives a good account of itself in both mobile and base use.

The unit tested was kindly made available by Bail Electronic Services. ■

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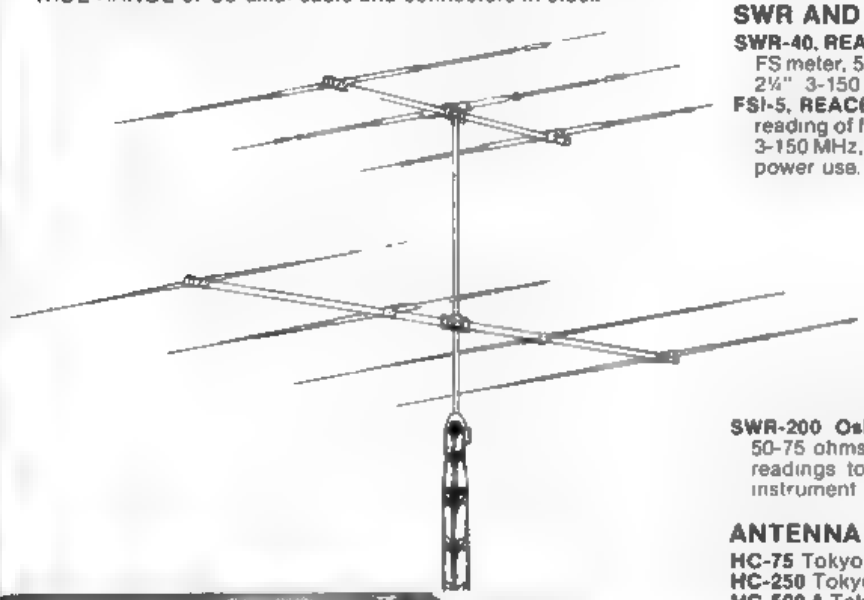

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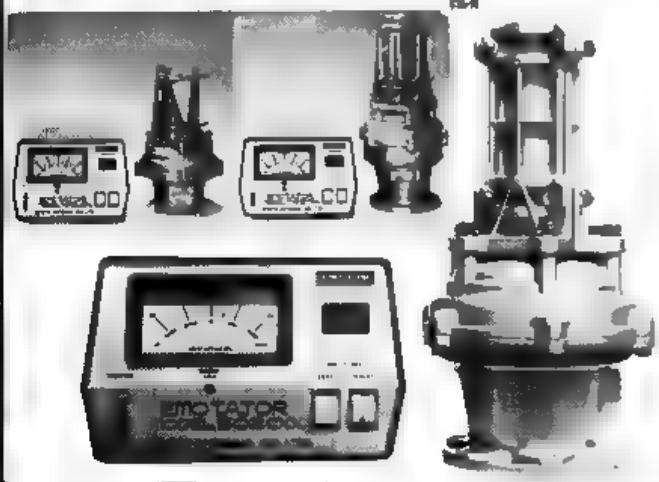

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Mrs. Mac sat quietly in her chair in the Glenwood Nursing Home at Greenwich, a Sydney suburb, listening as Ed Carruthers VK2AQF and myself proudly presented her with a Certificate of Membership to the Royal Naval Amateur Radio Society. She wondered why we were making such a fuss of her. We felt humbled and extremely proud to have met this fine lady. Although paralysed down her right side as the result of a stroke, she maintains an active mind and at times was downright cheeky.

Who is Mrs. Mac? And just why were Ed and myself presenting her with Society membership?

Mrs. F. V. McKenzie, OBE, is Australia's first qualified woman Electrical Engineer, the first licensed woman amateur radio operator — under the call sign of VK2FV, and the first woman member of the Wireless Institute of Australia. Nothing very remarkable in that in this age of liberated ladies. But Mrs. Mac achieved this in the early 1920s. However, this is not her main claim to fame. She is directly responsible for training between 10,000 and 12,000 Allied servicemen and women as telegraphists during the Second World War and is also the founder of what was called the Women's Emergency Signalling Corps (WESC), which later became the Women's Royal Australian Naval Service. Possessed of an active mind, Mrs. Mac also corresponded with Albert Einstein.

To really understand the feats of this remarkable lady, we must delve into the past and trace the story of one of Australia's unsung heroines. A person who is indeed a legend in her own lifetime.

Born in Melbourne on September 28, 1892, Florence Violet Wallace was destined to make her way into a man's world. Her family soon moved to Sydney and so she was educated at Sydney Girls' High School. During her younger years she was fascinated by all things electrical. Even as a girl she was able to fix lights that burnt out and repair fuses, even to rewiring the family home. She fitted a light in the pantry which came on when the door was opened, much to her mother's chagrin.

With such an interest it was natural that when she finished high school she should enrol in a diploma course of electrical engineering at Sydney University. Miss Wallace graduated as an Electrical Engineer in 1923 and commenced in the trade to earn a living working alongside her fellow male graduates. A tiny diminutive figure, just five foot tall and usually wearing blue overalls, she proudly admits that she was treated as an equal by the men. She often took the jobs that many of the men refused because they were not prepared to travel to the outer suburbs to work.

She met and married Cecil McKenzie, another electrical engineer. It was not surprising that they should open an electrical shop, which was located in the Royal Arcade, Sydney. The business was firmly established as a supplier of electrical contractors' items, but some "wireless bits and pieces" were carried as additional stock. Mrs. McKenzie, as she now was, soon realised that the demand for these strange "wireless bits and pieces" would increase, so she and her husband built up their range at the expense of the electrical contractors' supplies.

Always of an enquiring mind, Mrs. Mac was forever asking her "wireless customers" what they used these bits and pieces for. Eventually she became so fascinated by wireless that she began her own studies and added another claim to fame — that of being Australia's first woman amateur radio operator, VK2FV.

The atmosphere in No. 6 Royal Arcade was always friendly and fellow amateurs dropped in for tea and a chat with this young lady who knew so much about radio. From the early days when she learned from her customers, they now came to Mrs. Mac to learn. She seemed a natural telegraphist and amazed people with her skill. Another important asset was developing at that time — the art of passing on information and skills — of teaching.

Around this time Mrs. Mac, together with three others, formed a magazine called "Wireless Weekly". Eventually she had to bow out when the financial pressure got too great and the "Wireless Weekly" went on to become Australia's premier electronics monthly, "Electronics Australia".

Mrs. Mac acquired one of the very first electric cookers. She looked around for a book to tell her how to use it to the best advantage. There wasn't one, so true to form, Mrs. Mac set about rectifying the situation. She was not an experienced cook, so she purchased a dozen cookery books — English, French, German and American. She patiently went through all of them, picking out those recipes she considered contained good sensible ideas. Then she practised them on her husband! Her electrical cook book was such a success it sold out on the first edition.

She then went on to form the Electrical Association for Women and gave electric cooking demonstrations all over the city and suburbs. She wrote a safety book on electricity for children at the request of the NSW Education Department. This was the very successful "The Electrical Imps".

This now brings us to 1939, a time when dark clouds were gathering over Europe. When Neville Chamberlain returned from Munich and said there would be peace in our time — Mrs. Mac did not believe him. She started thinking what she could do and what part women could play in the coming war. She realised that the most important part of the war would be communications and that was one job that women could do. So she opened a school in Sydney to train girls in morse code and radio.

Mrs. Mac took in more than 50 enthusiastic girls in the six months before war was declared at her school at No. 9 Clarence Street, Sydney. It was soon discovered that women have a natural aptitude for morse code and others forms of signalling. The number of trainees increased rapidly, so the Women's Emergency Signalling Corps was formed.

It was not long before the premises at No. 9 Clarence Street became overcrowded. A large old wool store at No. 10 Clarence Street was found to have the first and second floors vacant, access being by two long flights of very steep and narrow stairs. The rent, however, was very reasonable, and finance being a serious problem, it was decided to move to these premises.

One day a keen amateur pilot came to Mrs. Mac and asked her to teach him morse so he could join the Royal Australian Air Force. At this stage a sufficient standard in morse was required for entry into the RAAF. Soon more and more young men with military aspirations were coming to Mrs. Mac to learn morse code. It is interesting to note that later on, several of Mrs. Mac's WESI girls were co-opted into the Air Force Recruiting Centre to conduct morse tests.

From then on scores of servicemen from all services came to Mrs Mac for morse training. It is estimated that Mrs. Mac and her girls trained between 10,000 and 12,000 telegraphists from Australia, the United States and India.

Mrs. Mac installed audio equipment so that twelve different classes could be conducted at the same time. There were enough partly-trained girl telegraphists to cope with the scores of servicemen and recruits who flocked in. The RAAF installed Bendix radio equipment for training purposes. The Australian Army sent lorry loads of soldiers to have early training in morse before going to the Middle East. The RAAF sent several groups of servicemen in uniform, with their own instructor, Lt. L. George, to use the WESC equipment.

The Royal Indian Navy sent their communication ratings to keep their morse and visual signalling skills up whilst their four corvettes were being completed at Cockatoo Island Naval Dockyard.

Numerous Royal Australian Navy musterings went to the WESC Signalling School to improve their morse.

There were many nationalities attending the school, but never at any time was there any disorder or need for obvious discipline. The conduct of the girls and all who attended the classes was always above reproach, and as up to 12,000 men passed through the school in war-time, some idea of the atmosphere of dedication may be gained. Life at the radio school was never dull. There were always lorry loads of new pupils arriving.

Frequently Military Inelligence would appear on her doorstep with complaints from nervous guests in the hotel next door who thought a spy was at work when they heard morse code in the middle of the night!

Mrs. Mac also trained scores of American servicemen, both from the USAF and the USMC. It is worth quoting from the "Sydney Morning Herald" of 1943: "'The Americans were greatly surprised to find our girl signallers capable of sending and taking messages equal to their fastest speed,' said Mrs. F. V. MacKenzie of the Women's Emergency Signalling Corps, today. Seventy members of the US Air Corps attend the WESC rooms each day, where Australian girls are instructors at classes ranging from beginners in signalling to those doing 30 words a minute.

At least 10 girls are at the rooms all day and from 50 to 100 come at night, after office hours. 'The only change we've made for the US lads is to alter our morning and afternoon tea to morning and afternoon coffee,' said Mrs. McKenzie.

Already 170 WESC girls have enlisted in the three forces, and a new group of members will begin training in May. Mrs. McKenzie finds that boys and girls learn signalling equally well, but that girls make better instructors. 'They have more patience than men in the instructing job,' she said."

No fees were ever charged for any tuition. The girls of the WESC gave one shilling per week towards the rent, etc. There was also a visual signalling section which was mostly used by Merchant Navy officers sitting for their Second Mate's, First Mate's and Master's Certificates. There was very seldom an occasion for any of them to sit a second time for their examinations. The visual signalling section was equipped with signalling lamps, flags and code books, etc.

According to Mrs. Mac the Americans were anything but ready for war. And she still remembers the frantic young American who rushed up her stairs on a Thursday and begged her to teach him just one thing by the following morning. How to get his craft out of Sydney Harbour safely.

Mrs. Mac thought for a few seconds and then asked him did he know the flag "D" (I am not under command — get out of my way). He said he did. So she told him to fly the flag and to keep his siren going until he reached the sea.

The following afternoon one of her students reported that there was quite a shemozzle on the harbour that morning. "Some crazy Yank, flying D, had sped out of the harbour with his siren going nonstop, bringing all shipping to a standstill." She knew he'd made it!

One day, a particularly dedicated girl brought in an English magazine with an illustrated article about the WRNS, and she was soon joined by a number of the girls, all of whom were fired with the ambition of becoming WRANS if the Royal Australian Navy could be persuaded to use them.

Mrs. Mac immediately wrote to the then Prime Minister, Billy Hughes, to see if Australia could establish a similar service to the WRNS. But he just dismissed it. So she flew to Melbourne to see the Naval Board. The chairman said "Girls in the Navy! What could they do?" Mrs. Mac told him to send an examiner to Sydney and she and her girls at WESC would show him. Eventually Commander Newman, R.A.N., went to Sydney and was astounded at the operations of the WESC. However, all was not plain sailing. There was still a great resistance towards women in the Navy and Mrs. Mac had a long battle with the Naval Board.

She remembers that Board members kept asking about sex, so she told them she had hundreds of men and women working together studying morse code and there had never been any goings on. Finally she threatened to take her girls to the Army or RAAF, and the Naval Board gave in. Twelve of her girls were recruited into the Navy, but with the proviso that there be no publicity on this break with tradition. The WRANS were formed in 1941 and for some time the first recruits kept their green WESC uniforms.

Mrs. Mac and her girls continued training servicemen all through the war. She remembers one Army Major who came to her when his signallers were sent to WESC for morse training and asked her not to teach them fast morse, but just slow and sure, as he did not want his messages mutilated under difficult receiving condition under gunfire. The detachment was eventually sent to the Middle East. After the war this same Army officer wrote to Mrs. Mac to thank her and commend her training as not one of his messages were sent or received incorrectly.

For her services during the war she did not take any form of payment. There were times when she went for days without a meal, as that would have interfered with her work of training telegraphists. After the war she received the OBE for her services.

Even though peace was achieved, there was still work for Mrs. Mac to do in training telegraphists. RAAF pilots were returning to civilian life and looking at the commercial airlines for employment. But morse was required. Who could they go to for training?

Almost without exception the original pilots of QANTAS after the war were trained in morse by Mrs. Mac. She also taught forty policemen morse. Today she proudly wears a special medallion conveying the thanks of the NSW Police Commissioner, who was one of her "boys".

For nine years after the war she kept up her work in training telegraphists. During this time and until his death in 1955, Mrs. Mac corresponded regularly with Professor Albert Einstein. He was intensely interested in Aborigines and she sent him all kinds of data about them.

By 1954 the services all had sufficient training establishments for their own needs and the commercial airlines had set up their own schools. There seemed no more work for Mrs. Mac, even though she was still training the Captains of the Torres Strait Pilot Service. After the Torres Straits Pilots had left, she closed the Signal School and retired to put her feet up in her home in Greenwich, where she still had her original cooker. She would not part with it despite having a more modern one, as the original one had a lot of sentimental value. One of her other hobbies was collecting fine china, with Wedgewood being her favourite. She still taught the occasional student at her home.

Two years ago Mrs. Mac suffered a stroke which left here paralysed down the right side. She now lives in a nursing home in Greenwich. But she is far from lonely. Her "girls and boys" remember her. She has a constant stream of visitors, ranging from her wartime pupils, some of them now grandparents, to the Police Commissioner, senior QANTAS Captains and retired Admirals. Prior to her stroke she would hop on a train at a moment's notice if one of her girls needed help. Re-unions of the WRANS have taken Mrs. Mac across the country and every year on Mothers' Day her boys throw a champagne party and present her with an enormous cake.

That then is the story so far of Mrs. Mac, a delightful lady and a fantastic person to meet. A woman who made her own place in a man's world before it became fashionable. But she is not a feminist and has no time for "pushy females", for in her own quiet way she has achieved far more. "I was born on the same day as Confucius, so it seemed only natural that I became a teacher," Mrs. Mac told me. Even today she still reads the work of Confucius.

In view of the outstanding work of Mrs. Florence McKenzie, OBE, during the Second World War in training telegraphists from all of the Allied armed forces, plus the role that Mrs. McKenzie played in the formation of the Women's Royal Australian Naval Service, the Royal Naval Amateur Radio Society has great pleasure in

announcing that Mrs. Mac has accepted membership of the Society. The Society is honoured to have Mrs. Mac as a member and hopes this will be considered as a small recognition of her work.

Mrs. Mac was presented with her membership certificate by Terry Clark VK2ALG, the Australian Branch Manager of the Royal Naval Amateur Radio Society, on August 29th this year.

The cover photograph shows Mrs. Mac and VK2ALG admiring her membership certificate of the Royal Naval Amateur Radio Society.

Membership of the RNARS is open to all amateurs and SWLs who have been or are serving in the Navy, Merchant Navy or been civilians working for the Navy. Details can be obtained by contacting the Australian Branch Manager, T. R. Clark VK2ALG, PO Box 537, Albury, NSW 2640, or by checking into the Society's 80m nets on a Monday night at 1030Z on 3613 kHz or a Tuesday night at 1030Z on 3527 kHz.

Mrs. Mac, RNARS number 1321, we are pleased that you have accepted membership of the Royal Naval Amateur Radio Society, we are honoured to have you as a member. ■

NOVICE NOTES

ELECTRICAL SAFETY

Extract from the Brisbane Water County Council house journal "Currents", reprinted here in the interest of electrical safety:—

At the beginning of each year, statistics are supplied by the Electricity Association of Australia, relating to fatal accidents. An analysis of fatal electrical accidents reported shows 94 per cent of these occurred in domestic dwellings involving the use or handling of extension three core leads.

Each of us at some time becomes a "do-it-yourself" handyman, and uses an extension lead. I felt a closer look at some of these accidents may help prevent a similar incident in your house. Here are a few examples:

(1) THE DECEASED, while standing on damp ground in slippers, contacted the activated frame of a portable electric saw. The saw was supplied from an unearthed general purpose outlet via three flexible extens.on cords. This three-pin plug connected to one of the extension cords was broken and the earthing conductor, which was not terminated, was in contact with the active conductor, thus activating the frame of the saw.

(2) THE DECEASED was repairing a motor car in a concrete-floored garage. The car was supported on metal stands and a metal jack so that the engine was at earth potential. Deceased was lying on a low metal trolley with metal wheels, and of a type used by motor mechanics when working under vehicles. A metal edge of the trolley cut a flexible cord connected to an inspection lamp and made contact with the active conductor, thus activating the trolley. When deceased applied a metal wrench to the engine his hands and body were in simultaneous contact with earth and the active conductor.

(3) THE DECEASED received a fatal electric shock when he contacted the exposed live pin of a three-pin plug which was attached to an extension lead. The lead was fitted with a three-pin plug on either end.

(4) THE DECEASED pensioner received a fatal electric shock of approximately 240 volts when he contacted the metal frame of an electric drill which was energised due to an incorrect connection in an extension lead

(5) THE DECEASED was electrocuted when he made contact with the exposed metal of single insulated hedge clippers which were made alive because of transpositions in TWO OF THE THREE extension cords he was using.

(6) THE DECEASED received an electric shock which proved fatal when rolling up a live electric extens.on cord. The flexible cord had been used to supply power to a mixer from a power point approximately 90 metres away, and was lying on muddy ground over which motor vehicles had passed, making it subject to damage. The deceased disconnected the live cord from the concrete mixer and began to roll it up. Upon reaching the area where vehicles had been passing over the cord, he made contact with the active conductor and received an electric shock.

(7) THE DECEASED was leaning against the scaffold pipes drilling the metal work of the building which was alive. The three-pin adaptor was pulled slightly out of the extension lead, exposing live pins, which had come into contact with the sheet metal fixed to the building.

On the basis of this information it seems fairly obvious we should immediately carefully examine any extension leads we may have, to ensure:

(1) That plugs on both ends of the lead are in good condition with no internal wiring exposed.

(2) That each core is correctly connected, particularly the earth, which should be green, or green and yellow.

(3) That each core is clamped tightly by the terminal screws, with no stray strands protruding.

(4) That sheath covering cores is in good condition with no obvious damage, and that the lead is serviceable in all respects.

Old type plugs should be discarded for the more modern type which have an insulating barrier between the wires inside and also means for clamping the sheathing of the flexible cord and for relieving the strain on the cores at the terminals.— Reproduced from Smoke Signals, September 1979. ■

☆ ★ ☆

ABSORPTION FREQUENCY METERS

The simplest type of frequency meter consists of a coil and a variable capacitor, tunable over the frequency range desired.

A frequency meter of this type, when tuned to the frequency and coupled to the output, will extract a small amount of energy. This energy can be used to light a small torch bulb. See Figs. 1, 2. A more accurate measure of resonance can be obtained by using a diode and milliammeter. See Fig. 3.

Although this type of frequency meter is not suited to precise measurement of frequency, it is useful for checking a transmitter, e.g. fundamental frequency, harmonics, parisitic oscillations, neutralization of an amplifier, field strength measurements, or any application where it is desirable to detect a small amount of RF energy and measure its frequency.

HELP!! PLEASE!!

Pictures of Novices etc. required for this column — URGENTLY!!

Contact EDITOR

The inherent losses in the absorption type frequency meter limit its useful accuracy but it is indeed a very useful instrument. Its sensitivity depends upon the indicating device. By using a microammeter very small amounts of RF may be detected. I have one device with a link of coaxial cable and using a 0 to 0.5 mA meter as the indicator with which I can probe into a faulty transmitter and find the offending stage very quickly. BEWARE of HIGH tension voltage!

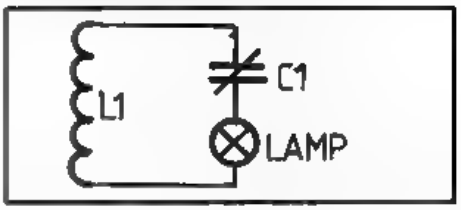

FIG. 1. A simple Absorption Frequency Meter.

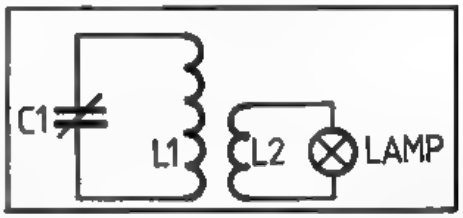

FIG. 2. In this circuit the lamp is inductively coupled giving a sharper resonance point — due to less load on the tuned circuit.

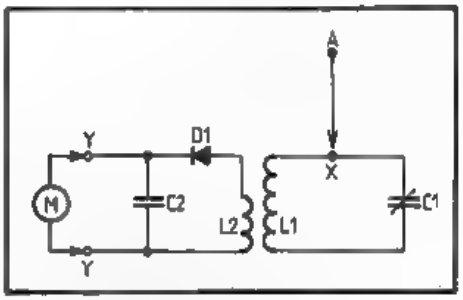

FIG. 3 Absorption Frequency Meter using a diode and meter. "A" is a small pick-up antenna used when the device is used as a field strength meter. It can be a piece of bronze welding rod — length 18 inches. Plugged into point "X". By extending the leads at point "Y" the meter may be used near the operating position.

COIL TABLE — Using 100 pF at C1.

Freq.	Wire Size	No. of Turns	Length	L2
1.8	28 EN	80	1¾"	16
3.5	24	35	1⅝"	10
7	20	15	1½"	6
14	16	8	1¼"	4
28	16	4	1"	2

All coils are 1¼ in. diamter and may be plugged in. Calibration of the instrument may be made by means of a grid oscillator.

Harold VK3CM

Reproduced from GAR/TV Club Newsletter June 1979. ■

MORE TRICKS OF THE TRADE

Submitted by Eric Trebilcock L30442
(With acknowledgment to SARL (Durban Branch))

Again we have some more rules or hints that might make your DXing a little easier and happier.

(a) Be polite and courteous, no matter how much difficulty you are having or how many poor operators are on the frequency. Remember, 20 stations saying "Stop tuning on the frequency" only adds to the QRM

(b) Be honest with signal reports. The only way a DX station can judge how he is getting out, is the report that he receives. (I remember a station giving a 5 x 9 report yet not getting the call correct, the right signal report, the handle or QSL information. I am not joking, you hear this repeatedly.)

(c) Do not waste time repeating the DX station's call sign. He knows that already.

(d) When working in a split frequency pile-up, do not change frequency with every call. Stay put for a while and let the mob move, leaving you with a partially clear frequency and a better chance.

(e) If you are calling and not getting results, **listen.**

Observe the DX station's tuning procedure. If he is listening off his own frequency, spot the station he is answering, determine if he is tuning up or down the band, and keep ahead of the pile-up. Always identify your report on CW with your call sign and get an "R". This saves you a returned card with "SRI OM, NOT IN LOG", when you thought you had him cold. ■

AMATEUR SATELLITES

Peter Brown VK4PJ

A wealth of information should have been available in last month's Amateur Radio. Is that information going to be utilised successfully? Will it further amateur activity in satellite communication by *many* and not just a few? We need more amateurs communicating by *satellites*, thus widening and developing our VHF and UHF expertise. We need more 70 cm activity. Do we have more projects than we can handle?

THE OSCARS

Oscar 7 is still with us providing communication, on mode "B" particularly; mode "A" not so good. What a great unit Oscar 7 has proved to be and a credit to its constructors. Get yourself on to mode "B", 70 cm up, 2 metres down, where there is plenty of room and results are excellent. Oscar 8 is going fine but mode "J" has many baffled as yet (myself included). The AMSAT September 1979 Newsletter has some solutions to the problems.

AMSAT

For the newcomer AMSAT is the organisation with world-wide membership located in Washington, DC, and co-ordinates amateur satellite activities. AMSAT publishes a quarterly bulletin (newsletter) for members. The September issue contains "A new AMSAT for the 80s", "Satellite Tracking for the TRS-80", "Echo 70 Improvement for Mode J", "Orbit Determination Techniques", "Phase III Satellite AZ-EZ Programme for HP 67/97", "Phase III Scientific Special Service Channel" and "Success at Last with Mode J", which latter article tells of trials and tribulations before achieving satisfactory mode "J" operation.

Membership of AMSAT is US$10.00 per annum, Life Membership is US$100.00, to AMSAT, PO Box 27, Washington, DC, 2044, USA.

NETS

You may have noted mention of an 80 metre net, Sunday evenings, 1000Z, on satellite matters? This net, because of QRM and QRN, has transferred to 7065 ± QRM, and VKs 2RX, 3ACR and 4PJ usually participate.

The AMSAT Asia-Pacific net, JA1ANG net controller, commences at 1100Z Sunday evenings, 14275 kHz and takes in most Western Pacific countries.

PHASE III

Here are some notes from Harry JA1ANG on "How to get 100 watts ERP from your current gear".

If your present rig delivers 10 watts output on 70 cm, use an array that has 20 dB power gain. Suppose that the feeder los is 3 dB, then you will lose half your 10 watts. Thus 5 x 100 = 500 watts ERP. You might be able to get away with this, especially if you are going to be on CW most of the time. If SSB then you will either have to:—

(1) Use a 20-50 watt linear amp.

(2) To be on the safe side, use an array that has 20-23 dB gain.

(3) Invest in low loss coax, and aim for a 1.5 dB or less feeder loss.

Elevation control will become a "must" in any case.

However, when the satellite is near apogee, it will almost "stay put" and thus is called a semi-stationary satellite. When at apogee it will be at an altitude of approximately 36,000 km. The period will be 11 hours (approx), and when at perigee the altitude will be at 1,500 km, approximately

When the satellite is at apogee, it will see practically half the globe. If right over the North Pole will see all the northern hemisphere. Thus for 4-5 hours round-table QSOs between Tokyo, London and New York will become commonplace. Position of apogee will change very slowly in the northern hemisphere for the first 2-3 years, then over the equator, and in 2-3 years over the southern hemisphere Regardless of the above, Oscar 3A will enable world-wide QSOs.

RECEIVING SET-UP

AO-7 mode "B" users will not have much difficulty, other than perhaps a 1S unit or so weaker signal However, since the satellite will be spinning at about 60 r.p.m, and uses a "Tristar" antenna, a "funny" modulation of about 3 Hz may cause reception on SSB to be almost impossible. AMSAT suggests the use of a circular polarised receiving antenna such as a crossed Yagi, which can be switched.

PREDICTIONS

This month's Oscar 8 predictions are by courtesy of Norman VK4NP, a front runner in micro-processor operations. He has taken the AMSAT newsletter, December 1978, page 21, period and progression for December to calculate for 1979. The calculations by my observations are quite satisfactory and compare favourably with the W1AW RTTY broadcasts of predictions given daily.

Period: 103.22403 minutes. Progression: 25.807305 degrees.

VK4NP's programme also provides other needed data. Comments please.

VK4PJ. ■

ORBIT PREDICTIONS — DECEMBER 1979

	OSCAR 7			OSCAR 8		
Date	Orb. No.	Eqx Z	Eqx °W	Orb. No.	Eqx Z	Eqx °W
1	23069	0049	79	8863	0133	70
2	23081	0144	93	8877	0139	72
3	23093	0043	78	8890	0000	47
4	23106	0137	91	8904	0005	48
5	23118	0038	76	8918	0010	50
6	23131	0131	90	8932	0015	51
7	23143	0031	75	8946	0020	52
8	23156	0124	88	8960	0025	53
9	23168	0024	73	8974	0030	55
10	23181	0118	87	8988	0036	56
11	23193	0017	72	9002	0041	57
12	23206	0112	85	9016	0046	58
13	23218	0011	70	9030	0051	60
14	23231	0105	84	9044	0056	61
15	23243	0005	68	9058	0101	63
16	23256	0059	82	9072	0106	64
17	23269	0153	96	9086	0111	65
18	23281	0054	81	9100	0117	67
19	23294	0147	94	9114	0122	68
20	23306	0046	79	9128	0127	69
21	23319	0141	93	9142	0132	70
22	23331	0040	77	9156	0138	72
23	23344	0134	91	9169	0143	73
24	23356	0033	76	9183	0004	48
25	23369	0128	89	9197	0009	50
26	23381	0027	74	9211	0014	51
27	23394	0121	88	9225	0020	52
28	23406	0021	73	9239	0025	54
29	23419	0155	86	9253	0030	55
30	23431	0014	71	9267	0035	56
31	23444	0109	84	9281	0040	58

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JANUARY TO DECEMBER 1979

RESULTS OF THE 1979 VK/ZL/OCEANIA RTTY CONTEST

1.	G3HJC	319,700	(100)
2.	HB9AVK	317,804	(84)
3.	JA8ADQ	295,580	(62)
4.	SM6ASD	284,996	(104)
5.	F6ECI	280,742	(91)
6.	VK2CBW	273,420	(60)
7.	EA4XW	252,375	(103)
8.	W7DPW	223,750	(84)
9.	DJ6JC	216,636	(78)
10.	VK3KF	194,724	(49)
11	F8XT	146,920	(71)
12.	WD8IUP	144,400	(44)
13	JE2JWK	120,375	(41)
14.	VK4AHD	119,424	(48)
15.	ZL2BR	115,668	(41)
16.	W4YZ	114,460	(36)
17	VE2QO	107,725	(44)
18.	VK2ATQ	93,346	(31)
19.	VK2[illegible]	78,320	(28)
20.	OZ2X	75,400	(49)
21	DK8FS	67,876	(34)
22.	VK2AYK	67,440	(28)
23.	OZ8GA	66,690	(65)
24	VE2AXO	58,120	(30)
25.	VE7BTO	47,848	(26)
26.	JR2TZL	42,040	(24)
27	DK5WJ	37,493	(38)
28.	VK2BIS	32,040	(19)
29.	DL0WU	28,320	(38)
30.	DM6AK	26,776	(39)
31	VK2BGL	25,380	(19)
32	VK8HA	24,856	(14)
33.	W2KHQ	15,744	(14)
34	DF7FB	12,287	(22)
35.	DM2DLE	11,875	(27)
36.	G3RDG	9,277	(34)
37.	DK6FA	9,116	(18)
38.	VK2AHB	8,820	(11)
39.	DL6WZ	4,697	(16)
40.	IS0ESS	4,364	(9)
41	SM0EZO	1,430	(20)
42.	SK7HW	1,260	(6)
43.	OK2BJT	860	(16)
44.	HA5KFU	64	(5)

(No. of QSOs in brackets)

MULTI-OPERATOR STATIONS

1	I5MYL	1,156,744	(184)
2.	VK2TTY	381,780	(62)
3.	DK0MM	269,525	(79)
4.	VK2WG/P	184,788	(47)
5.	VK2BYI	138,360	(36)

SWL STATIONS

1	Horst Ballenberger	DL SWL	333,764	(91)
2.	Hans Norbert Sokol	DL SWL	116,155	(84)
3.	Kurt Wustner	DL SWL	95,450	(77)

Logs from OK1-11857 and OK1-20677 disqualified due to not recording both sides of the RTTY QSO.

Check logs were received from VK2SG, UA3AHM and DJ4KWA.

SUMMARY

Conditions for the second contest were not at all good. Comments from individual operators indicate that the "woodpecker" caused many loss of points. It is hoped next year to expand the time of the contest as similar to the SARTG contest. The number of VK/ZL stations operating was disappointing, but it is hoped next year more will be on.

Two late logs received well past the closing date were not accepted. We would like to see more logs submitted as only 55 were received from over 300 different stations operating.

On behalf of the VK/ZL RTTY group we would like to thank those who participated, and see you and your friends again next year.

AWARDS OF CERTIFICATES WILL BE SENT TO THE WINNING CONTESTANTS

73s and good DX de VK2EQ/VK2SG
(VK/ZL/Oceania RTTY Contest Committee) ■

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, prepayable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes. ■

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Roy Lopez (VK2BRL) Manager

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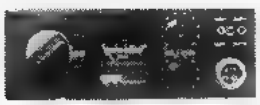

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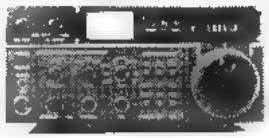

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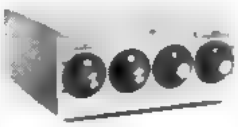

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AMATEUR BAND BEACONS

Freq.	Call Sign — Location
50.001	WA6MHZ — San Diego
50.004	PY1RO — Brazil
50.005	H44HIR — Honiara †
[illegible]	HL9TG — Seoul *
50.023	HH2PR — Haiti
50.025	6Y5RC — Jamaica
50.030	HC1JX — Ecuador
50.030	KL7CDG — Alaska
50 030	ZS6PW — South Africa *
50.035	ZB2VHF — Gibraltar
50 050	ZS6LN — South Africa *
50.050	WA1ENX — Maine *
50.059	PY?? — Sao Paulo †
50.075	HK3/4 — Columbia (repeater)
50.080	TI2NA — Costa Rica
50.088	VE1SIX — New Brunswick
50.091	WA6JRA — Los Angeles *
50.092	W7KNA — Oregon*
50.093	WA8FTA — Michigan *
50.096	K7IHZ — Arizona *
50.100	ZS6HVB — South Africa *
50.101	FO8DR — Tahiti *
50.104	KH6EQI — Pearl Harbour
50.110	KG6JIH — Guam *
50.110	JD1YAA — Marcus Island *
50.110	KH6 — Marshall Islands *
50.110	KG6RO — Saipan *
50.110	AL7C — Alaska *
50.500	5B4CY — Cyprus
51.999	YJ8PV — New Hebrides
52.100	VK0BC — Casey Base
52.200	VK8VF — Darwin
52.300	VK6RTV — Perth
52 350	VK6RTU — Kalgoorlie
52.400	VK7RNT — Launceston
52.440	VK4RTL — Townsville
52.460	VK2WI — Sydney
52 500	JA2IGY — Nagoya
52.500	ZL2VHM — Palmerston North
52.510	ZL2NHF — Mt. Climie
52.800	VK6RTW — Albany
52 800	VK6RTT — Carnarvon
53.000	VK5VF — Mt. Lofty
144.010	VK2WI — Sydney
144 400	VK4RTT — Mt. Mowbullan
144.475	VK1RTA — Canberra
144.500	VK6RTW — Albany
144 600	VK6RTT — Carnarvon
144 700	VK3RTG — Vermont
144 800	VK5VF — Mt. Lofty
144 900	VK7RTX — Ulverstone
145.000	VK6RTV — Perth
145.100	ZL1VHF — Auckland
145 150	ZL1VHW — Waikato
145.200	ZL2VHF — Wellington
145 250	ZL2VHP — Manawatu
145.300	ZL3VHF — Christchurch
145.400	ZL4VHF — Dunedin
432.400	VK4RBB — Brisbane
432.475	VK7RTW — Ulverstone
433.000	ZL2UHF — Wellington
433.100	ZL1VHF — Auckland
433.150	ZL1VHF — Waikato
433.200	ZL3UHF — Christchurch
433 250	ZL2VHP — Manawatu
10370	ZL2UHF — Wellington

* Denotes attended operation
† Denotes new listing.

The H44HIR beacon listed for the first time on 50 005 is running with 1½ watts at present, no other details from VK5KK.

Gil VK3AUI advises having a 28 MHz contact with PY2WD in Sao Paulo, who is also a 6 metre operator, and being told of a beacon there on 50.059, but language problems prevented further information being gathered at this time.

The GARC Newsletter mentions a 6 metre beacon proposed for Geelong, site probably near Repeater VK3RGL at Mt. Anakie, with the following details: 52.033 MHz, FSK, call sign VK3RGG, two stacked crossed dipoles and 25 watts output. This will be a useful beacon when Ch. 0 finally changes to Ch. 10, but the choice of frequency seems a bit strange, it probably won't worry most operators from the immediate area, but the Geelong amateurs may find it quite a nuisance if it is very strong locally and they want to work DX in the first 50 kHz of the band. 52.133 would be a much better choice surely!

The Auckland Group (VHF) in New Zealand has received a permit to construct a beacon on 51.0125 MHz, or 12.5 kHz inside the bottom of their band. Details later when they come to hand.

Also please note the Townsville beacon is now transmitting again on 52.440 MHz with its former call sign of VK4RTL . . from VK4ZJP.

[illegible] from Japan

A letter from Hatsuo JA1VOK via Peter VK5ZPS re 6 metre conditions makes very interesting reading, and the following extracts are of note. JA1VOK has worked 37 countries on 6 metres as of 20-10-79 over a period of 10 years, and several other JAs are also nearing 40 countries. DX missed by JA1VOK are CE, CX, VE, VK9NI, ZL1BIQ/Kermadec and 9N1BMK. Hopes to work VK2/Lord Howe Island, VK0BC, 4S7EA and VR3AR next March/April.

During February 1979 JA1VOK worked KH6IJ, KH6JSI, AL7C, KL7AP, KL7CQ, KL7SDG, KL7JAI, KA6ADE, P29BH, K5CM, W6s, VK2, 3, 4 and 8.

March: KC6IN, KG6RO, KH6XX, LUs, PYs, P29PN, YJ8PD, KH6NS, W6s, VK1, 2, 3, 4, 5 and 6.

April A9KQ/MM near VS6, DUs, FO8DR, H44PT, VK4ZZI/H44, KX6BU, LUs, YB0X, ZK1AA, VK3, 4, 5, 6, 7 and 8.

May: WB5QPT/KH2, VU2RM, YJ8OT, VK4 and KV6.

June: HMs, HS1WR, JD1s, P29ZFS and VS6EG.

July P29ZNL.

August C21AA, JD1s, WA5CXE/KX6, VK4 and VK8.

September A35DX, KC6ZZ, KG6JKS, WH2ABO, KX6PF, YJ8IR, HC1JX, KL7s, VK2, 4 and 5. (HC1JX was worked during a fantastic opening on 7-10, the first HC in Japan since Cycle 19!)

6 metres has been opening up nicely to North America during October, KL7s worked on 18-10 and 19-10. JA4MBM also worked eight W7s on 19-10!

All the above exotic call signs show at what a disadvantage we are placed firstly by living in the southern hemisphere and secondly not being able to work on 50 MHz. There is little doubt quite a few countries in the JA1VOK list would have been available to VK had we been able to use 50 MHz.

FROM WITHIN AUSTRALIA

If by some chance Australia was suddenly stuck in the northern hemisphere during October the shock would have been like realising you had been listening all the time without an antenna! Combinations of several factors seemed to give ideal Es and F layer propagation from JA to W to G with many other areas in between. Anyway, firstly in our area let's review the situation.

KH6 openings. Two separate openings to VK5 etc. 30-9 from 0733 to 0810Z and on 17-10 from 1005 to 1205Z with signals peaking to S9 from KH6EQI. The latter opening was also observed in VK2 and 3. Other small openings have occurred but are too minor to mention! Late September brought JA openings more frequently to lower VK and the following 6 metre day-time openings occurred: 27-9, 30-9, 2-10, 3-10 and on 4, 6, 7, 8, 9, 11, 12, 13, 17, 18, 19, 21, 22, 25 and 27-10. Good 52 MHz openings were on all days except 3-10, 9-10, 19, 21, 22 and 25-10, which were weaker. In addition to the above many weak night time openings, best on 17-10, 18-10 and 25-10. In addition KC6SX was heard by VK5KK, VK5RO, VK5LP and VK5ZZZ on 50 105 MHz at 1200Z on 18-10. Signal readable but not much hope of working KC6 anywhere with a JA opening into KC6 at the same time! From comments in other areas KC6 was also heard in VK2. On 7-10 a fast CW signal on 50.065 at 0211Z turned out to be a KJ6 on Johnston Island coming in for a few minutes at S4 at the VK5LP establishment . . . seeking more information on this one from YJ8PD.

From VK6 is would seem more people over there aren't listening at the right time! On 27-10 around 0400Z VK6WD worked W6XJ, who was on 52 MHz cross band to 28 MHz. No two-way on 6 metres. At the same time (0400 to 0430Z) W6XJ was copying VK4RTL Townsville and many VK4s on 52 MHz working JAs. Oh dear, Oh dear! W6XJ could not raise one VK4 because it is suspected the JAs were stronger!

PERTH HEARD IN BRITAIN

Several times British TV on 40.5 MHz has been copied about the place but not much of the higher channels. On 27-10 VK6HK copied 48.25 MHz sound and confirmed that it was British by checking programme material with a G station on 10 metres. Time approximately 0900Z. To top that G4BPY copied VK6RTV Perth beacon on 52.300 MHz from 0858 to 0909Z peaking RST 549. Further to that, VK5ZDR copied a W7??? on 50.035 around 0500Z on CW. Call signed was not identified but a gnal heard by others on tape. It would seem quite a bit happened on 27-10.

NEW ZEALAND GETS 50 MHz

To digress from actual working to some good news from New Zealand. As from 28-10-79, ZL amateurs with suitable licences are now able to use 50.000 to 50.150 MHz under the following conditions.

Operation is allowed basically on a non-interference basis with Channel 1 TV. Operation is unrestricted outside TV hours but allowable during periods of non-programme transmission (i.e. test pattern periods). The situation is not quite clear with respect to transmission during programmed periods outside the service area of Ch. 1. If it is still on a non-interference basis then it would seem allowance will be made for operation in this period.

However, that's ONE BIG STEP in the right direction and moves have been afoot in VK for some time to get a similar agreement. I have advocated in these notes many times that there seemed to be a case for operation on a non-interference basis in VK, particularly outside the service areas of the Ch. 0 transmitters. When stations outside these areas would be wanting to work DX on 50 MHz the Channel 0 transmitters are not audible, being at a distance not being propagated by F layer and other modes.

Generally speaking I feel the VK amateurs in the main have been very law abiding — there have been many occasions when overseas stations could have been worked on 50 MHz but the temptation has been resisted. VK5LP has been a good boy and not worked FO8DR, XE1GE and a KJ6, all available on 50 MHz, and there are plenty of other operators just as good! (We also know of several that were not!! — Ed.)

If P and T see fit to allow us to join the world-wide company of stations operating on 50 MHz, it is hoped the segment could be a little wider than the New Zealand one, say at least 50.000 to 50 500 MHz because if all operating in VK to Japan shifts down to 50 MHz the band will be filled with dogpiles of stations over the entire part of the spectrum available, thus excluding opportunities for working more rare stations. It would seem sensible for VK to work JA during periods of good conditions on 52 MHz, shifting down to 50 MHz as the band closes. This plea and the plea for more space is made as a result of the fact that JA is likely to be worked from VK more often than ZL.

It would seem from earlier experience this year, and from the September/October period, that March/April/May next year could be the peak for the present cycle. It is hoped that if we are to be granted operation on 50 MHz it will be done as soon as possible and not after that period — many

operators will need to improve or change antenna systems to successfully work on both 50 and 52 MHz. It can be done but it takes some time. Here's hoping!

SPORADIC E

Es conditions have again appeared in the southern hemisphere but as could be expected the occurrence has been low. On 12-10 the band opened to Townsville from VK5 from 0830 to 0915Z. This occurred at the same time as (or rather it created) a JA opening to southern areas. Similarly VK4RO was 5 x 9 ++ from 0515 to 0545Z on 13-10. On 26-10 good opening between Sydney and Adelaide with 5 x 9 ++ signals between 1045 and 1125Z. Also VK1FT worked VK5ZPE. From 1240 to 1403Z VK8ZRT (Roger) from Alice Springs worked into VK5 and VK3 with signals peaking over S9 in VK5 at least. Equipment IC502 into 35 watt linear and 4 element yagi. Interesting contact heard the other day . . . JA7ZZZ to VK5ZZZ. Try saying that over and over using phonetics.

LOOKING OVERSEAS

As usual everything is happening overseas. First station information regarding DXpeditions. VK2BYX/Lord Howe Island heard working JA on 27-10. Good news for VBOX hunters. From 29-12-79 to 6-1-80 YBOX will be active again. A more permanent station may be allowed on 6 metres (YB1CS). VU2RM is going, despite rumours, and was recently heard in Okinawa on 7-10. 4S7EA transmits on 50.120 between 0200 and 1400Z when he can, but does not have a set schedule yet. KC6SZ active from 12-10 to 26-10. WA4TNV/KL7 leaving Shemya in November. EL3FY's equipment would seem to be an FTV650B to a 4 element beam. H44HIR beacon on 50.005 at present being tested on 1.5 watt driver stage from Honiara. FK8AB has 50 MHz capabilities now. VS6BF active on 6 metres to JA. KC4AAD is going to the Antarctic. Normal callsign is K6DYD and he will be running a kilowatt with an SSB tape loop on 50.105 MHz. He will also operate on 28.885. In case you may be wondering where the call sign of YJ8IR was coming from on 18-10 on 50 MHz then relax, Peter YJ8PD was showing some visitors the JAs on 6 metres! EI2W is now definitely active as from 19-10, although some doubt is expressed about the fact that he is running much power. Or maybe he isn't running much power compared with the W1, 2s, etc., working him!

Now small gatherings of what everybody else has been working around and about. VK A35DX active on 22-9 to JA. HL9TG worked YJ8PD on 29-9. KC6ZZ worked 650 JA stations and 5 other DX stations on 6 metres during September. H44DX copied TI2NA around 0250Z on 7-10 and played signals back via 10 metres. On 4-10 FO8DR worked YJ8PD, two KX6 stations and of course JAs. YJ8PD copied W6XJ and vice versa on 7-10 but no contact. JA also worked HC1JX and XE1 on 7-10. 4S7EA's antenna up on 12-10. ZS6LN heard British and Irish TV signals on 51.750 MHz, mistaking them for VK TV signals, from 1549Z on 12-10.

VK4RO worked KC6SZ on 14-10 on 52.030 CW. YJ8IR working JA around 50.185 on 18-10. JAs working KC6JJ, KC6SX and KC6ZZ on 18-10. Same day a JA4 heard W5LIG. On 20-10 JA6RC heard in VE1. W6XJ to ZL1BPW on 20-10 at 2330Z. During 18 and 19-10 period VE1 and W1, W2 to ZB2. On night of 20-10 first "quiet" night to JA in H44 for more than 2 months! ZL to W6 on 21 and 22-10. W6XJ copied Ch. 0 sound from Brisbane on 22-10 at 0000Z for some time but not VK4s heard. VE1s copying 49.750 MHz TV from Russia on 22-10.

On 23-10 JA to PY2 at 0000Z. Several quiet nights also to YJ8 from JA up to that time. On 23-10 JA to W6 and W7. On 27-10 W6 to ZL and JA up to 5 x 9! Same for 28-10. W6XJ worked G cross-band 50 to 28 on 27-10. All that sums up Pacific DX. Cross Atlantic DX was furious in late October with many cross-band contacts 28 to 50 MHz with G. Highest Solar Flux for the period was 242 on 20-10. Lowest 7-10 with 198. Highest A index on 9-10 was 29 and the K index did reach a value of 6 for a short period after 0600Z on 8-10. During extensive JA-W-VE-G working average K index 1 and A index 8.

YJ8PD worked 8J4ITU early October, this is the ITU station in Tokyo. FK8AX is active on 6 metres. VK4RO reports at least 4 stations active from KX6 Marhall Islands. 27-10 JA7JGU reported KH6EQI 5 x 9 + at same time as 6 metres open to VK1, 2, 3 and 5. YJ8PD now running 500 watts output on six.

THE WORLD ABOVE 144 MHz

While six metres has been rolling you might think the other VHF bands might go quiet. WRONG!

From VK4 comes the following. On 6-10 and 7-10 tropospheric conditions between P29 and VK4 gave numerable contacts. A lot of contacts via both VK4 repeaters and the Pt. Moresby repeater. One more unusual contact was between Bundaberg and Cairns via the P29 repeater! VK4RO worked P29ZEV on 6-10 on 2 metres SSB. Some direct QSOs from Cairns to Pt. Moresby, hand-held to hand-held! What with ZL and now P29 close handy on 2 metres has anyone in VK4 now got three countries on 2 metres?

Down south the tropo season has started again with contacts from VK3 and VK6 to VK5. On 20-10 the band opened to Melbourne but only VK3OT heard on the band! On 23-10 VK3RTG audible from VK5CK's QTH in the mountains from 0705. VK6RTW on 144.5 audible in Adelaide from 0600Z with contacts being made by VK5CK, VK5ZPS, VK5ZDR, VK5RO, VK5KK, etc., to VK6KJ, VK6XY, VK6WG and VK6ZKJ. At 1426Z VK6XY to VK5KK, 5 x 3 on 432.1 MHz for first 432 MHz contact over the Great Australian Bight this season. On 24-10 band still open to Albany up to 0200Z with VK5RO, VK5ZDR, VK5KK to VK6KJ, VK6ZKJ and VK6WG around 2130 to 2230Z. No signals on 432 MHz. VK5LP worked Roy VK3AXV via Ch. 2 northern repeater, and shortly afterwards on 52 MHz! Roy was not operational on 144 at the time. One 25-10 VK5CK to VK3ARS south of Melbourne at 1035Z plus many other contacts into VK3 from his superb QTH near Mt. Lofty, and with the new stacked pair of 13 elements working very well thank you! Several VK3 repeaters audible over the next few days, but very little SSB activity.

Jim VK5ZMJ at Port Pirie has been upgrading equipment and is now a force to be noted on 52, 144 and 432 MHz, with 100 watts on 52 and 144, and 50 watts on 432. Another country station is Garry VK5AS, at Cowell, looking for contacts on 52 and 144 MHz.

NEWS FROM BRAZIL

Gil VK3AUI sends a copy of a letter from Rolf PY1RO, who advises he has located his beacon near the home QTH and is able to use it with his 6 element yagi when not operating himself. During the day when he is at work the beam is turned towards ZS, about 100° from Brazil, and when he comes home about 2200Z the beacon goes off and is turned on again when he goes to bed. At that time the beam is pointed due south for VK land and will stay that way till about 1100Z, when he goes off to work again and turns the antenna on to ZS land.

Rolf reports there have been good openings to VK on 10 metres between 0400 and 0600Z, which is between 1 and 3 a.m. local time! He indicates however that if he hears of anything, or is heard, and is advised, he will be glad to get up for three or four days and try and make contact with VK. He has already worked into JA and 5B4AZ lately, the latter making country number 26.

SOUTH AFRICA

Gil VK3AUI also gives some information about South African 6 metre activity and advises Jack ZS6LN cannot tune much above 52.1 MHz, but will come up on 52 MHz if there is an opening. Most likely frequencies would be 52.002 or 52.020, mainly due to calibration problems, as he is using an overlap from the 51 MHz segment. He knows of our 52.050 calling frequency but would prefer a signal to net on to. Jack ZS6LN can be found on 28.885 MHz around 0700Z when he has a sked with KH6NS. Jack's phone number is Area Code 01521 and phone number 4366. If you have ISD facilities I am sure Jack would like to be told you are hearing him on six metres!

FROM WESTERN AUSTRALIA

Andy VK6OX at Carnarvon has written outlining activities from northern VK6. An outline is given here to allow you to compare notes with your own area. 6-9: JA Class I TEP), 6-9: JA2, 3, 4, 7 (I), 7-9: 0420Z strong burst of noise on 52 MHz. 0535 to 0622Z worked HL9TG on 52.005 5 x 9 both ways, no sign of JAs. 10-9: 0923-1230Z JA1, 2, 3, 4, 5, 6 (II); 11-9: 0816-0920Z JA2, 3, 6, very strong (I), 12-9: 0936-1002Z JA3, 4, 5 (I), 14-9: 0855-1023Z JA2, 3, 5, 6, 9, S1-8 (I), 18-9: magnetic storm 0905Z, 19-9: 0205-0257Z JA1.

22-9: 0923-1410Z — JA1, 2, 3, 4, 5, 6, Class I and II, 5 x 9. During the period Andy worked JH6TEW on FM using his PRC10 and A50-12 linear, 8 watts output, 5 x 9 both ways! 25-9: 0944-1025Z JA1, 3, 4, 5, 6, 7, 9, 0 (I). 3-10: 0150-0210Z four way contact with HL9TG, VK6ZCC (local) and Wayne VK6WD in Perth (backscatter). HL9TG 5 x 8, Wayne 3 x 1. 5-10: 0838-1240Z JA1, 2, 3, 4, 6, 9 (I and II). At 1218Z worked A6KQ/MM on a tanker somewhere in the South China Sea. Uses an IC551 to a small antenna. Signals 5 x 5 out, 5 x 8 in.

Finally Andy reports that JE1HYR passed on that 4S7EA has a new TS600 and 6 element yagi, and may possibly run a beacon on 50.120.

GENERAL NEWS

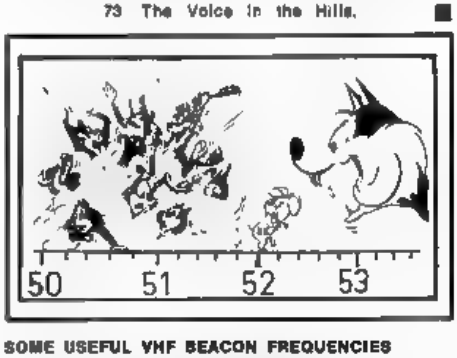
From "Break-In" comes a report there appears to be quite a high level of interest in VK in monitoring the 2 metre path between ZL and VK. Rod Graham VK2BOJ has a microprocessor controlled 2 metre scanning receiver programmed to cover the ZL repeaters, whilst other amateurs appear to be monitoring the ZL repeater output frequencies.

From "Hamarks" comes a warning from Ernie ZL30V, who advises if you are in the habit of carrying nicad batteries in your pocket, or use a short as part of the recovery process for nicads with a "memory", beware, these innocent devices can and will explode during high current discharge with disastrous effects!

This column this month represents the start of the 11th year of production from the VK5LP establishment. (A tremendous effort, Eric and greatly appreciated by all.—Ed.) A separate article outlining the highlights of the past ten years on the VHF/UHF bands is almost ready and it should make interesting reading — lots of things have happened in that time, old call signs have migrated to other bands, new call signs have come into prominence, such is the passage of time.

This month will also include Christmas once again — may I take the opportunity of wishing all my readers the Compliments of the Season, and to thank the various contributors who have so kindly supported me during the past year, and the Editor of AR for his tolerance. I especially would like to thank David VK5KK for his extra help filling in the gaps in VHF activity in this State the things I don't hear, and the result of his band monitoring. Closing with the thought for the month, "They are a nuisance, but strings of Christmas tree lights teach the family a valuable moral lesson — the whole strand is only as strong as it weakest bulb."

73 The Voice in the Hills. ■



SOME USEFUL VHF BEACON FREQUENCIES

The Aerodrome Terminal Information Services' (ATIS) VHF AM transmissions listed below carry weather and terminal information for the associated cities. The transmitting antenna is usually vertically polarised and omnidirectional in pattern. They operate, in most cases, 24 hours per day.

ATIS Location	Frequency (MHz)
Adelaide	117.3
Sydney	115.4
Perth	113.7

Cairns	113.0
Canberra	113.5
Rockhampton	116.9
Brisbane	113.9
Melbourne	113.9
Alice Springs	115.9
Darwin	113.7
Port Hedland	114.1

From Avondale Heights, Melbourne (about 8 km from Melbourne Airport), the Adelaide ATIS has been heard at strength 5 and Rockhampton at strength 2. The receiving antenna was a 2m vertically polarised 6 element beam 13m above ground (approximately 65m ASL)

Other beacons worth looking for are the ABC FM transmissions from Adelaide, Sydney, Canberra and Melbourne.

Information from Cyril Maude VK3ZCK.

(A contact was made last January from the RAAF base at Pierce to Darwin airport using groundplanes and 10W AM transmitters on a frequency of about 120 MHz. This path should be open on 2m for well equipped stations when the ATIS signals are audible.—Ed.) ■

INTERNATIONAL NEWS

WARC 79

By the time you read this WARC 79 will be past history. It may take at least two or three months before the final conclusions can be put together for publication. Meanwhile listen to Divisional broadcasts for official news as it becomes available. Pay no heed to rumours.

When this article was scripted very little news had come forward because WARC 79 was still at the working groups stage and some of the work was running behind schedule.

Perhaps the most important warning was that any decisions can be modified at subsequent meetings of working groups or main committees as well as at a plenary meeting. In some instances a see saw situation might develop.

Any country can enter reservations on any particular final decision, by means of footnotes to the tables — assuming something of this nature continues into the future.

WARC 79 "work" was "delayed" whilst deliberating the choice of a chairman. Mr Roberto Severini of the Argentine was elected chairman and 9 committees were set up, of which not all were of direct interest to the amateur service — as examples, credentials and budget control. Committee 5 was the frequency allocation committee chaired by Mr Harbi of Algeria, and with him were five working groups, each responsible for a segment of the frequency spectrum.

Later, one of these working groups was split into two sub-groups of 5ba and 5bb. 5ba dealt with allocations below 4000 kHz under Mr Cook YV5FJL, and 5bb dealt with 4000 kHz to 27.5 MHz under Mr Peter Barnes VK3GH).

Committee 6 (Mr. Jim Wilkinson, the leader of the Australian delegation, was vice-chairman of this) handled Regulatory Procedures, Committee 4 Technical Regulations and Committee 8 the restructure of the Radio Regulations.

Altogether 137 radio amateurs had been identified as among the Conference attendees, totalling over 1,900 from 147 countries and 38 International organisations.

Working Group 5c dealt with allocations from 27.5 to 960 MHz. Working Group 5d actively discussed and re-discussed the spectrum area around the 23 cm and 13 cm bands and the USA "powersat" proposals around 2.5 GHz were sent to CCIR for study.

Article N30/41 of the Radio Regulations was discussed on 6th October. It was agreed that the frequency above which morse qualification would not be necessary be amended to 30 MHz. The USA had proposed that the morse requirement should be optional throughout the spectrum. At this meeting the IARU were asked by the chairman for comments and information. The IARU has accredited observer status at WARC's and hence may speak but not vote. Existing RR 1563 (6357) specifies 144 MHz as the lower limit.

A proposal by China in Working Group 5c on 3rd October to introduce land and maritime mobiles into the band 28 to 29.7 MHz on a secondary basis was withdrawn after discussion and negotiation. Committee 5 recommended no change for the band 28.0-29.7 MHz on 11th October; unless there are any "second thoughts" this will go to the plenary.

The 6m band was discussed in Working Group 5c on 9th October. The band was maintained as amateur exclusive in Region 2 — i.e. 50-54 MHz, but Region 3 posed more of a problem with a number of countries desiring to add other services to the band. The amateur service was strongly supported by Australia (which went so far as to say it could support a world-wide amateur allocation), Republic of Korea and Japan. No support developed in Region 1 for an amateur allocation at 50 MHz beyond the present footnotes which pertain to Southern Africa.

There appears to be general support for increasing the amateur satellite frequency bands. At a full meeting of Committee 5 on 20th October there was a lengthy discussion on HF broadcasting. Sweden stated that if there is to be a separate HF broadcasting conference at a later date than WARC 79 must agree to an appreciable expansion of the spectrum available for HF broadcasting, a view which was supported by the USA. India, in a long prepared statement, considered there should be a firm frequency assignment plan for broadcasting (in contrast to the present system in which there is a flexible quarterly review of individual needs by the users on a co-operative basis), which was supported by the USSR as it needed that spectrum for its fixed services.

Committee 5 ended up by forming a working group which is to study all of the proposals related to HF broadcasting and to consider, inter alia, the preparatory work that would be necessary to organise an HF BC conference, including the development of principles and the technical bases for planning.

Once again, please view all these comments with caution — anything could happen to them late in this WARC.

The Radio Amateur Societies of Cayman and Fiji have been duly elected as the 106th and 107th members of the IARU. ■

Where the action is! ITU WARC 1979 Conference Buildings.

COMMONWEALTH CONTEST 1979

As is well known, the ratio of the number taking part in any contest to those who go to the trouble of sending in an entry is very small indeed. This year's Commonwealth Contest was no exception to the rule, but the total entry at 126 was a continuing improvement on that of recent years. In fact, the entry received from VK was a record 41, topped only by the United Kingdom 45, with 22 VEs, 8 ZLs and 12 others from 11 different countries.

The points range of the first 6, 6613 to 5251, was very similar to 1978, 6877 to 5249, but the leading VKs improved their positions to 12, 14, 19, as compared with 23, 27 and 34 last year.

The leaders were —

		Points			Points
1.	VE7CC	6613	5.	G3FXB	5516
2.	VE3KZ	5795	6.	G3MXU	5251
3.	VE5RG	5646	12.	VK2BPN	4400
4.	VE3BVD	5527			

RECEIVING SECTION

2. Eric Trebilcock BCRS195, 2830 points.

AUSTRALIAN SCORES

		Points			Points
12.	VK2BPN	4400	80.	VK4LV	1090
14.	VK4XA	4093	85	VK4UR	1008
19.	VK3MR	3786	86.	VK3RJ	1005
23.	VK2AFG	3635	91	VK2BDU	948
25.	VK5MD	3405	91	VK3CG	948
27.	VK4KX	3160	97.	VK5KL	780
28.	VK2GW	3090	98.	VK5RG	770
29.	VK7BC	2900	101	VK8DB	740
38.	VK3ZC	2348	103.	AX6IE	655
40.	VK7RO	2320	105	VK3YL	620
44.	VK3AEW	2059	106	VK8SU	610
48.	VK7RY	1955	108.	VK3BDH	565
51	VK3XB	1850	110	VK5FQ	555
52	VK3CM	1813	113	VK4XJ	505
57.	VK6RU	1685	114.	VK2GT	490
60	VK3AYO	1545	118	VK5DL	400
66.	VK5SW	1425	119.	VK7ZO	358
72.	VK7CH	1290	121	VK3CT	275
74.	VK3YK	1218	122	VK5HO	200
77	VK7JB	1175	124.	VK3ABA	75
79.	VK8GG	1095			

Single band entries among the above were:—
14 MHz VK3AYO Overseas leader, VK3BDH, VK3YL, VK5DL.
21 MHz. VK3ABA.
28 MHz VK4XU.

OTHER PACIFIC AREA RESULTS

		Points			Points
10	5W1BZ	4736	73.	VS6EJ	1250
11	ZL2BR	4519	83.	9V1TL	1023
29.	ZL1HV	2900	89.	ZL2BCO	995
31	ZL2TX	2860	102.	ZL1AZE	730
67	P29EJ	1385	116	ZL2MM	423

AUSTRALIAN AWARDS

The Silver Medallion for the leading VK entrant was won by Peter Naish VK2BPN, who repeated his success of 1974

The Bronze Medallion for the VK middle placing was won by Graeme Challinor VK3GG.

How the leaders made their scores.

QSOs/Bonus areas per band, 80 to 10.

VE7CC	31/23	106/42	144/54	158/45	78/43
VE3KZ	34/12	94/38	196/51	149/26	114/24
G3FXB	11/8	66/40	121/59	66/48	66/35
VK2BPN	17/15	38/31	105/46	70/35	37/26
VK4XA	17/15	27/25	128/50	43/26	44/25
VK3MR	21/16	36/28	164/51	22/19	13/12

RSGB COMMENTS

This year's Commonwealth Contest again produced a satisfactory entry, with the total number of logs received increased by eight percent over 1978. Many comments reflected the unique nature of this contest, with, perhaps, G3DYY summing up the overwhelming view "The friendly contest — that's what it should be called." Without doubt it is one of the most demanding events in terms of strategy and experience, but also requiring a high degree of efficiency in equipment and a comprehensive range of antennas.

Band conditions were generally good throughout the contest, although the lower frequency bands, and 7 MHz in particular, were not as good as in 1978. Conditions on the day seem to have favoured western Canada and the Pacific area, as reflected in the number of those stations high in the table.

After two years in the runner-up position, Lee Sawkins VE7CC took top honours. The good transpacific openings enabled him to build up a total of 207 bonus QSOs which put him in a commanding position ahead of Bob Nash VE3KZ. Al Slater G3FXB continued his dominance of the UK side of the contest, notching up his seventh successive win of the Col Thomas Rose Bowl

The Receiving Section continued to be a tussle between Ron Thomas VR551622 and Eric Trebilcock BCRS195, with the Receiving Rose Bowl going to the former this year. This was Eric's 38th "BERU" and he must join the list of those eligible for long service awards!

The 14 MHz band again attracted most single-band entries, with VK3AYO taking the lead position overseas, with 109 QSOs and 50 bonuses, using a TS820 and 18AVT vertical antenna. At home, on this band G3PVA's FT401/quad combination produced 108 QSOs and 63 bonuses.

There was a considerable amount of comment on various aspects of the rules. The overall concept of the contest came in for discussion in a number of logs, with the suggestion that its format should be changed to the style of the Commonwealth versus the rest of the world. This would clearly be a major change and not one to be made lightly. It would put the Commonwealth Contest in a very similar position to many other contests, removing what to many people are the unique features of "BERU" However, it would obviously also vastly increase the potential activity and the size of the entry Somewhat related to this issue is the question of the system of bonus points. There is some feeling, notably in VK and ZL, that the present arrangement is very unfair to UK stations, and that the different G call areas should count separately, with the implication that G stations would be able to work one another The scoring was changed some years ago to allow bonus points for the first three contacts with each call area. The main reason for this change was to try to even up the inequality between the UK and the rest of the world. It is open to debate just what weighting the various factors have on how close to the top of the table a particular station comes. Apart from the scoring system, the relative abilities of the operators involved, the phase of the sunspot cycle and the actual band conditions on the day, all play their part. In very recent years the top of the table has been dominated by western Canada and Oceania, but anyone who feels that this is an unchangeable situation should look at the results for 1975 when the leading G station was only 26 points behind the leader, and the top VE7/VK/ZL could only achieve seventh place.

The other areas of the rules mentioned in logs is the actual duration of the contest, with a number of suggestions that it should revert to 48 hours, or that it should be 24 hours out of 36 or 48. About an equal number of entrants would like it to stay at 24 hours. The rules are reviewed each year, and the HF Contests Committee would be pleased to receive any comments and suggestions at any time.

Next year sees the 50th anniversary of the first BERU contest, and the committee hopes that there will be bumper activity, and that many stations who took part in the first event in 1930 will be able to make an appearance.

1980 CONTEST

1200GMT 8 March to 1200 GMT 9 March. Rules will appear in **February** AR. ■

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

1/3 Waverton Ave., Waverton 2060
17 October, 1979

The Editor,
Dear Sir,
With the very large increase in the number of licensed amateurs in Australia, there will be many of them who will have some difficulty becoming aware of the excellent technical articles which have appeared in AR from time to time.

It would seem to me that there would be a real benefit in reprinting some of the articles which have aroused special interest, or which have included designs which have become specially popular over the years. For example, the G5RV antenna is widely used, is cheap to construct and would appeal to a lot of new amateurs. As far as I can see, one would have to go back to the January 1973 issue of AR to get details, although, of course, many amateurs who use them could describe them. However, people like to read the whole article for themselves, I would think. In addition to original articles, some of the variations and improvements could be included.

As an amateur of only three years standing, I do not know what other good, old articles might be considered, but such things as the linear amplifier for Australian conditions could be constructed by a lot of people, and would still offer scope for home-brew construction.

I hope this suggestion will be of some interest.

Yours faithfully,
R. Jim Somerville VK2BJS.

EDITOR'S NOTE:
Consideration has been given but costs to date have precluded such a venture. ■

Templers Rd., Wasleys, SA 5400
17-10-79

The Editor,
Dear Sir,
In answer to VK3OT's letter on page 27 of July 1979 AR I think one should just take a slightly broader view than that given. I do agree to a great degree with the comments with respect to the WAVKCA, it's only commensense, after all some 30 VK stations had contacts with VK0 alone in 72-73 season. Many operators today neglect that fact but myself, as a 12-year-old SWL, still remember the openings of 10-11th December 1972.

Now reading further into the letter, VK3OT says that VK5KK didn't work VK9ZNG first and that VK3ZCG did VK3OT however fails to give ACCURATE details of the claim The opening referred to by VK3OT occurred on 29-11-75. VK3OT refers to this as the day he missed out. MY FIRST CONTACT occurred on 26-11-75 at 0100Z to VK9ZNG on 52.06 MHz SSB. I worked VK9ZNG at 0225Z on 27-11-75, this time with 59 signals from his long-wire. That QSO must have lasted 45 minutes, as we talked about virtually everything going on 6 metres. The contact on the 26-11-75 was VK9ZNG's **FIRST VK QSO** according to Martin. Talking to VK5ZZZ (ex-VK2ZGC) I learnt that many VK2s worked Martin over and over again, yet very few received a QSL card

Recently I came across the VK9NI saga. Now that VK9 (Norfolk Is) is pretty dead on 6 metres I hope that VK3OT can make a good go of a DXpedition! Keep up the good work in AR

David Minchin VK5KK
Active VHF/UHF Operator (not HF)

EDITOR'S NOTE
This letter has been edited ■

The Editor,
Dear Sir,
The Divisions of the WIA have endeavoured over many years to serve the needs of amateur radio in each State, with varying degrees of success from committee to committee. Many have worked with great dedication and ability, some others with great dedication and no ability, and some with no dedication to the wellbeing of amateur radio and with some ability to destroy it. I believe we probably have some from each category in power at this time in the Divisions. It is time that the third group is exposed and if you are in the position to go to Divisional meetings you will soon find out who belongs to which group It is your job at the next annual election to make sure people of the first group mentioned get on the committee, and if you run out of those put some of the second group in

Hopefully, having elected a good committee, they will see the wisdom of dissolving Divisions, certainly the other groups can't. The Arnold report, and more recently the anonymous ERIS in Amateur Radio Action, have advocated moves along these lines. Using Victoria as an example, what do I as a country member get out of the Division — Sunday morning broadcast and QSL bureau (which I don't use). This is very little for my money Many clubs run similar set-ups for about a third the cost so is it any wonder many say why should I join the WIA. By getting rid of the Divisions and having clubs and zones who can go direct to the federal body the overall efficiency will be greater However, as the federal body would have more work, more paid staff would be needed Even so the overall efficiency would be greater and membership dues may be reduced

Have a think about this, members. If the WIA is going to represent more than 50 per cent of the amateur population sensible changes are needed to it to make it more attractive to non-members. A good committee will see the advantages of such a move, they are not doing the job in the WIA as an ego trip

Yours faithfully,
R. D. Champness VK3UG ■

GPO Box 5076, Sydney 2001, NSW

The Editor,
Dear Sir,
I would like to make a few comments re how I see amateur radio in Australia today When you consider that 27 MHz has been taken from amateurs without compensation and that some of our bands' usefulness have been limited, due to ever increasing numbers of commercial broadcasters I feel that the prestige and/or usefulness of having an amateur radio licence is limited.

Giving signal reports, discussing latest equipment and antennas, the weather is all very nice,

but not essential. **What practical reasons to the community can we show for our existence?** Why should we study and pass exams and build or establish radio stations? How does it benefit the community, who should be reminded often that we are not CB radio operators, we can provide benefits to the average citizen quite easily (if only our hands were not tied by the Wireless Telegraphy Act)

I believe that the loss of 27 MHz so quickly and easily should be a reminder to us all that in the future we may be pulling crystals out more often than plugging in new ones.

I would like the editor or someone to give me the answers to the following proposals.

(a) Why are Australian amateurs not permitted to have the full frequency coverage of 80 and 40 metres?

(b) Why are we limited to 400 watts PEP SSB output?

(c) Why are Australian amateurs not permitted to handle third party traffic and handle overseas phone patches, or provide a useful service such as a "HAMAGRAM" or similar. Is Telecom Australia scared of competition?

(d) Why do we adopt or allow a known problem, i.e. 27 MHz CB, to be permitted and not a useful service such as C?

I believe if amateurs are going to be able to maintain their present frequencies and **privileges** (?) they must show a **more positive reason in the community for their existence.**

We are constantly being labelled as crazed CB operators, and confused with same, by the majority of the community who cannot discern any difference.

Australia was ten years late in obtaining colour TV, FM radio broadcasts, cable TV seems buried before birth.

Oh well, I guess things could be worse. After WARC we may even be restricted even more in frequency; forbidden to use first names and discuss the weather; power may be limited to 1 watt (input) and operation strictly pedestrian mobile CW; crystal controlled, of course, and during daylight hours only.

Let's hope that some day Australia could inaugurate some benefits to local amateurs on its own merit. Why can't we inherit the good ideas of other countries (USA) and not just the bad (CB)

One can always dream, I guess. Has anyone seen my pools coupon? I think I have more chance of winning them than having any one of the above proposals adopted.

See you on the band some day — I think!

Sincerely,

James Goodger VK2JO.

[illegible]

(i) Re points (a), (b), (c) and (d) — basically the answer to these rests with "Official Government Policy". Please peruse ARs for the last three years — Editorials, WIANEWS and WARC items for a better insight to the WIA view

(ii) Hamagrams?? — Good grief!! — (VK5UV.) ■

WICEN

Ron Henderson VK1RH

Federal WICEN Co-Ordinator,

53 Hannaford St, Page ACT 2614

Ph. (062) 54 2059, A.H.

This issue sees the commencement of a series of articles on Emergency Series Communications Procedure. These should be read in conjunction with the previous column on prowords.

WICEN groups and operators should be able to use this series as training and instructional notes, thereby minimising the need to type local precis and handbooks.

At the onset it should be emphasised that WICEN will normally be working in conjunction with emergency services, police, fire brigades, etc., so good adherence to this common standard is necessary to avoid confusion and enhance our image as communicators

EMERGENCY SERVICE COMMUNICATIONS PROCEDURES (SECOND EDITION REVISED 1979) REFERENCE

Civil Defence Communications, Part 3, 1969.

INTRODUCTION

1. The information contained in these notes is based on the Civil Defence Publication "Communications Procedure (Radio Telephone and Telephone)". It has been somewhat simplified having regard to the specific needs of the WICEN Organisation and by deletion of reference to pure civil defence (in the sense of nuclear attack) procedures

2. Message passing procedures is an important means to an end — the end is the carrying of information quickly and accurately. It cannot be stressed too much, however, that procedure is only means to an end. An over rigid, inflexible adherence to a particular form of procedure, in certain circumstances, can have an effect reverse to the effect intended

3. Good amateur operating practices, together with a fundamental net discipline is very little different from the procedure outlined in this pamphlet. Therefore do not be frightened by the use of this procedure. Use it for what it is, a useful guide for the better regulation of a communication net and a means, by the use of standard phrases, to avoid inaccuracies.

DEFINITIONS

4. The following definitions are used in these notes

(a) CALL SIGN: The call sign is the call sign of the amateur concerned or, in the case of a group station, the nominated call sign.

(b) CONTROL: One station on a network (or "net"), normally the one serving the senior Headquarters, is appointed Net Control Station (NCS). It is responsible for the efficient clearance of traffic on the net and the maintenance of net discipline.

(c) LINK: Two stations operating on the same channel for the purpose of communicating to one another is termed a Link.

(d) NET: A number of stations operating on the same channel for the purpose of communicating with one another is termed at Net.

(e) PROWORD: (i) Prowords are pronounceable words or phrases which have been assigned meanings for the purpose of expediting message handling. A proword, or a combination of prowords, must not be used as the text of a message. (ii) The prowords given in a recent AR are authorised for general use.

(f) SUB-STATION: Any station on a net other than the control station.

(g) USER: A person, other than an operator, who uses a radio net.

TYPES OF MESSAGES

5. There are four types of radio telephone communication:

(a) Conversations: Usually a series of alternate voice transmissions between two users in which subjects may be discussed, questions answered and information exchanged. The transmission must be as brief as possible.

(b) UR messages: A user may wish to ask a question to get information, etc., without discussion. He can do this by giving his message verbally to the operator or by writing it down for transmission by radio as an Unregistered Message (UR). It consists simply of the user's text with an indication of the addressee where necessary. A UR message may be written on a message form with "UR" written over the Classification/Originator's Number spaces.

(c) Formal messages: A formal message is one that is written down and signed by the originator. It is normally written on a message form (CDF2 or CDF3). Records of formal messages are kept in signal centres or, if there is no signal centre, at the radio terminal.

(d) Service messages (SVC): A service message is one between communications personal concerning any phase of signals facilities or circuit conditions.

Service messages are identified by one of the following: (i) Reference to another service message, (ii) The abbreviation SVC as the first word of the text; (iii) By being specifically addressed to a signal centre.

Service messages generally concern messages previously handled, addressed to or refiled by the originating station, and will normally be assigned a precedence equal to that of the message to which they refer

HOW TO SPEAK

6. Clear speech is necessary to help the receiving operator to understand you. The following factors are important:

R — RHYTHM; S — SPEED; V — VOLUMNE; P — PITCH.

7. Rhythm. Any phase in ordinary conversation has a natural rhythm which helps to make it intelligible. This rhythm is to be preserved when the phrase is spoken and the following rules are to be observed

(a) The message is spoken in short complete phrases that make sense, and not word by word, e.g. —

Rations will be brought up/as soon as point Y is reached.

NOT

Rations / will / be / brought / up / as / soon / as / point / Y / is / reached.

NOR

Rations/will be/brought up as [illegible] as point Y is reached.

(b) Do not say "er" after a word, or insert it between phrases

8. Speed: (a) Speak steadily at medium speed. If you speak too quickly your speech will be received as an unintelligible jumble of words. Remember that the receiver often has to write what you say. (b) The speed of speech must be constant throughout. (c) The less important words must not be hurried. (d) If the message has to be written down by the receiver, pauses between the transmission of phrases must be longer.

9. Volume: (a) Speak more loudly than in ordinary conversation, but do not shout. (b) In ordinary conversation the important words are stressed, while less important ones are slurred over. Avoid this when speaking on the radio. Every word is spoken equally loudly, and the voice must not fade away on the last word. (c) Perhaps the most important thing is to keep the mouth close to the microphone, and speak correctly into it.

10. Pitch: High-pitched voices are more clearly understood. A deliberate effort should be made to speak with a higher pitch than usual. ■

QSP

IN THE VERNACULAR

The following gem is from a service manual for a power supply (which for our purposes shall remain nameless!)

"Regulator IC failure. It is difficult to provide any helpful advice on this subject as, after some years field experience with these ICs, the only failures that we have encountered have been two failures entirely as a result of our own incautious test-probing. However under normal operating conditions, if the voltage across VR1 is about 24 volts, the IC should draw 9 mA typically 12 mA maximum which drain can be calculated from measurement of the voltage drop across R21. Approximately 7 volts should be measured between IC pins 9 and 7 — absence of this voltage indicates that the IC is definitely stuffed." — Submitted by Ivan VK5QV. ■

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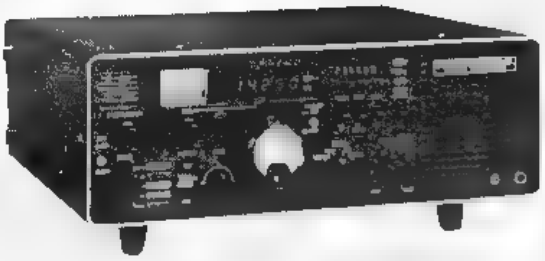
bail

BAIL ELECTRONIC SERVICES

YAESU



DIGITAL DISPLAY COMMUNICATIONS RECEIVER WITH CPU DIGITAL CLOCK & TIMER FRG-7000

FEATURES

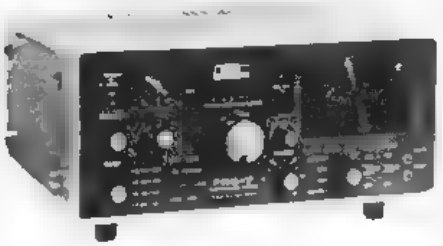
* Digital frequency display gives resolution to 1 kHz, using large, bright LED's for maximum readability.
* The built-in digital clock can be set to your local time plus GMT time. Just flick a switch for selection of the desired time!
* If you want to record a program, but have to be away from your station, the FRG-7000 will do it for you! The clock contains a timing feature that activates the receiver and internal relay contacts. Set the time you want to start and stop recording, hook up your tape recorder, and the FRG-7000 will do the rest!
* An FET front end provides excellent sensitivity, and the "Wadley Loop" heterodyne oscillator yields rock-solid stabil ty. Separate SSB and AM filters allow selection of the optimum selectivity for your application
* The built-in AC power supply allows operation from 100/110/117/200/220/234 volts AC, 50/60 Hz. The front panel lamps and digital display may be turned off, too, for energy conservation. A 12 volt DC supply is an available option.
* Ease of operation is ensured by careful selection of positions for controls and switches. You'll never own a receiver that's easier to use!

SPECIFICATIONS

GENERAL

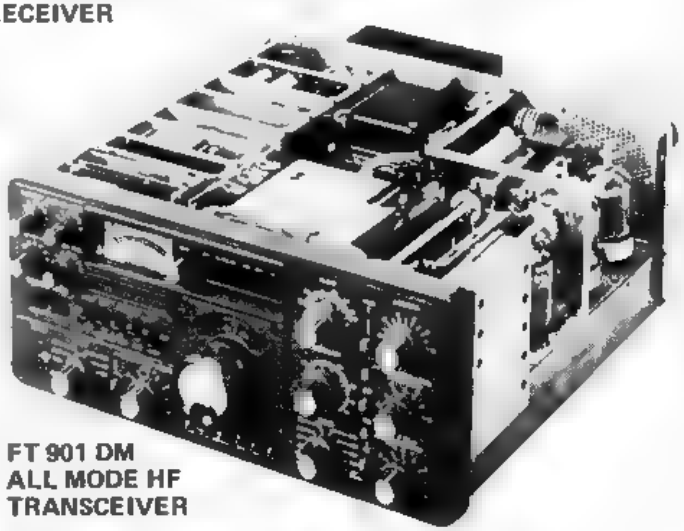
Frequency range: 0.25–29.9 MHz
Modes of Operation: AM, SSB, CW
Sensitivity: SSB/CW-Better than 0.7 μV for S/N 10 dB AM-Better than 2μV for S/N 10 dB (400 Hz 30% modulation).
Selectivity: SSB/CW ±1.5 kHz (–6 dB), ±4 kHz (–50 dB), AM ±3 kHz (-6 dB), ±7 kHz (–50 dB)
Stability: Less than ±500 Hz drift for any 30 minute period after warm-up.
Antenna requirements: Random wire for 0.25–1.6 MHz, 50 ohm unbalanced feed for 1.6–29.9 MHz.
Speaker impedance: 4 ohms
Audio output: 2 watts
Power requirements: 100/110/117/200/220/234 V AC, 50/60 Hz**
Power consumption: 25 VA
Size: 360(W) x 125(H) x 295(D) mm
Weight: Approx. 7 kg

** 117 volts AC for UL-approved model.



FRG-7 GENERAL COVERAGE COMMUNICATION RECEIVER

STATION ACCESSORIES



FT 901 DM ALL MODE HF TRANSCEIVER

ANALOG MODEL FT-101Z TRANSCEIVER

YAESU

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ICOM

RADIO TELETYPE TERMINAL
0-7000 TONO RTC

DAIWA LOW PASS FILTERS

FD30LS	32 MHz, Fc, 200 w, 3 stages

BALUNS

AS-BL	Asahi 50 ohm for beams
BL50A	50 ohm, 4 KW, 1.1 for dipoles
BL70A	70 ohm, 4 KW, 1.1 for dipoles

TUBES

6KD6	Finals for Yaesu linears
6JS6C	Finals for Yaesu transceiver
12BY7A	Driver
6146B	Finals

CW FILTERS

FT101E	Yaesu
TS520S	YG3395 Kenwood
TS820S	YG88C Kenwood

MORSE KEYS

HK702	Deluxe Key with marble base
HK708	Economy Key
HK706	Operator's Key
MK701	Manipulator (side-swiper)
PALOMAR	IC Keyer

JAYBEAM ANTENNAS

5Y/2m	5el 2m, 7.8 dBd gain, length 1.6 m
8Y/2m	8el 2m, 9.5 dBd gain, length 2.8 m
10Y/2m	10el 2m, 11.4 dBd gain, length 4.4 m
10XY/2m	10el 2m, cross yagi, 11.3 dBd
D8/70cm	Twin 8el, 70 cm, 12.3 dBd, 1.1 m
PBM 18/70	18el, 70 cm, 14.9 dBd, 2.8 m
MBM48/70	48el, 70 cm, 15.7 dBd, 1.83 m
MBM88/70	88el, 70cm, 18.5 dBd, 3.98 m
PMH/2C	Phasing harness
8XY/2m	2m cross yagi, 8el, 9.5 dBd, 2.8 m
12XY/70 cm	70 cm cross yagi, 12el, 13.0 dBd, 2.6 m

SCALAR

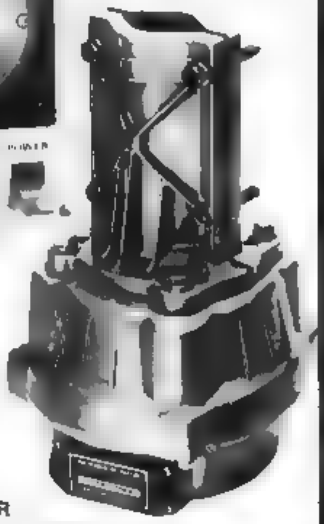
M22T	1/4 wave 2 m mobile whip, top only Qty 1-4
M25T	5/8 wave 2 m mobile whip, top only Qty 1-4
BASE	B/L for above

MICROPHONES

VM-1	Noise cancelling, hand ptt, low z

JOSTY KIT

- AMPLIFIERS
- TUNERS
- GENERATORS
- HI FI
- RELAY
- TIMERS
- DECODERS



ICOM GEAR

IC701	transceiver
IC22S	2m transceiver
IC551	6m transceiver
IC280	2m fm rem otable
IC502	6m ssb portable
IC202S	2m ssb portable
IC211	2m al mode
ICRM3	Remote control un t

ICOM

IC-551 6M TRANCEIVER WITH SCANNIN FACILITY

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&
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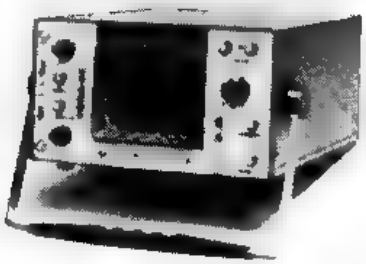
MORN.

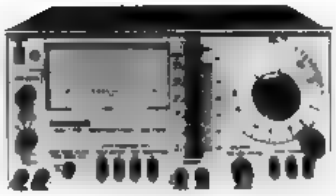
HEATHKIT
TEST INSTRUMENTS

LBO 508A OSCILLOSCOPE



Bandwidth DC-20 MHz. Sensitivity 10mV/cm. 130mm highly C.R.T.

LDM 170 DISTORTION METER



20Hz-20kHz 0.3% F.S. Measures distortion, signal-to-noise ratio, signal levels.

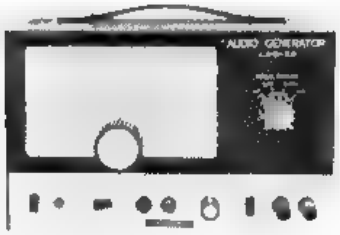
LAC 895 ANTENNA TUNER

Built-in SWR and in-line Watt meter. 5 bands from 3.5 to 28 MHz. 500W pep transmitter input.

LBO 510A OSCILLOSCOPE

20 mV/4MHz. FET'S input

LAG 26 AF SIGNAL GENERATOR

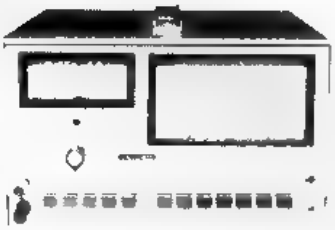


100KHz-100MHz Solidstate RF signal generator. Suited for aligning the IF circuits in AM, FM and TV sets.

LSG 16 RF SIGNAL GENERATOR

20Hz-200kHz Stable generator for all types of audio circuit.

LFM 39A WOW AND FLUTTER METER



For accurate and easy determination of the wow and flutter characteristics of tape recorders to JIS, CCIR and DIN standards.

LMV 181A AC MILLIVOLT METER

AC Voltages from 100yV up to 300V. 5Hz-1MHz.

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STORE (07) 48 6601, OFFICE (07) 341 5377
TELEX AA 40811 A.H. BRIAN 341 4767
CRES. 273 2552, BEV. 341 282 (GOLD COAST)

commodore

the PET computer

The Pet has a television screen, a keyboard as simple to use as a typewriter and a self-contained cassette recorder which is the source for programmes and for storing data in connection with these programmes. And it has, in its standard configuration, an 8K user memory. (This is in addition to the 14K operating system resident in the computer)

SPECIAL AT NO EXTRA COST

$200 value of programmes will be provided with each PET purchased prior to December 31st, 1979

2001-16/32

The CBM Computer is now a truly sophisticated Business System with the announcement of these Peripherals.

The CBM incorporated with the Floppy Disk and Printer makes an ideal business system for most professions and specialized fields medicine, law, dental, research, engineering, toolmaking, printing, education, energy conservation etc.

The CBM Business System as a management tool, delivers information to a levels of Business previously attainable only with equipment many times more expensive, the CBM Business system is one of the most cost efficient business tools today. It offers a wide range of applications from tagging management strategy in major corporations to organizing accounts and inventory control of small businesses. Here are just a few of the cost saving uses in the corporation profess onal or small business stock control, purchasing, forecasting, manufacturing costing, customer records, mailing list, etc. The CBM Floppy Disk and Printer a compatible business system at a reasonable price. Take a closer look at these Peripherals

2040

Dual Drive Floppy Disk

The Dual Drive Floppy is the latest in Disk technology with extremely large storage capability and exceptional file management. As the Commodore disk is an "intelligent" peripheral it uses none of the RAM (user) memory of the CBM. The Floppy Disk operating system, used with the CBM computer enables a programme to read or write data in the background while simultaneously transferring data over the IEEE of the CBM. The Floppy Disk is a reliable low cost unit, and is convenient for high speed data transfer. Due to the latest technological advances incorporated in this disk a total of 340K bytes are available in the two standard 5¼" disks, without the problems of double tracking or double density. This is achieved by the use of two microprocessors and memory I/O's built into the disk unit. Only two connections are necessary an A/C cord and CBM interface cord

Tractor Feed Printer

2022

The Tractor Feed Printer is a high speed printer that can print onto paper (single copies) all the CBM characters letters (upper and lower case), numbers and graphics available on the CBM. The tractor feed capability has the advantage of accepting multi-part sheets, using standard preprinted forms (custom zed) cheque printing for salaries, payables, etc. Again the only connections required are an A/C cord and CBM connecting cord. The CBM is programmable, allowing the printer to format print for width, decimal position, heading and trailing zero's, left margin justified, lines per page, etc. It accepts 8½" paper giving up to four copies. Bidirectional printing enables increased speed of printing.

CW ELECTRONICS

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CW ELECTRONICS

PROCESSED HAM

*MACROTRONICS M65 HAM INTERFACE FOR PET MICROCOMPUTERS.

The M-65 s a comp ete Morse Code and RTTY system for the PET microcomputer. It is made up of two parts the hardware and the software consists of one PC board which is connected to your rig and to your PET user port. No modifications are required to either your radio equipment or to the PET — everything plugs into existing jacks. No external power supply is required.

The software consists of two computer programs — MORSE and RTTY — supplied on one audio cassette. Both programs are written in BASIC with machine language subprograms. Each requires 8K bytes of RAM. Program MORSE allows continuous speed adjustment from one to 100 words per minute in any of three modes of operation: Receive, Send, and Code Practice.

In addition, up to ten programmable message memories (2550 characters total) allow "brag tapes", pictures, etc direct from the keyboard. A special feature allows sending the time automatically at the press of a single key!

Other MACROTRONIC modules include the M650 Deluxe RTTY and Morse system Interface with software cassette
MLK-1 loop Keyer modu e
MSK-1 Solid State Keyer modu e.
FSD-1 Phased-locked loop de-modu ator
especially for the RTTY enthusiast. If you have a TSR-80 or a Sorcerer, we can help you too!

AUST. AGENTS

*FELSHER CORP.

TR 128
RTTY REGENERATIVE SPEED CONVENTOR

TTL compatible connections for direct hook-up to the Felsher TU-170, also adaptable to other terminal units.

- 60, 67, 75, 100 WPM and 110 BAUD ASCII
- Stable crystal-controlled oscillator.
- 128 Character storage capacity with storage status meter to show buffer fill
- Pre-loads and repeats up to 128 characters
- Continuously variable character rate
- Low power CMOS circuitry.
- One-board (total circuitry) construction.
- Power requirement, 115V 60Hz, 5W

TU-170
AUTO START

State of the art design features make the TU-170 ideal for HF and VHF autostart operation at an unchallenged price.

- SIZE. 7¼"W x 3¼"H x 7½" D.
- Proved 170 Hz shift active filter demodulator.
- Lighted tuning meter for easy tuning.
- Current regulated loop keyer and power supply
- Autostart with threshold control and solid state relay.
- Stable audio frequency shift oscillator produces phase coherent sine wave tones
- TTL compatible inputs and outputs for auxilliary equipment.
- High level output for scope tuning.
- 100 Hz shift CW keying input.

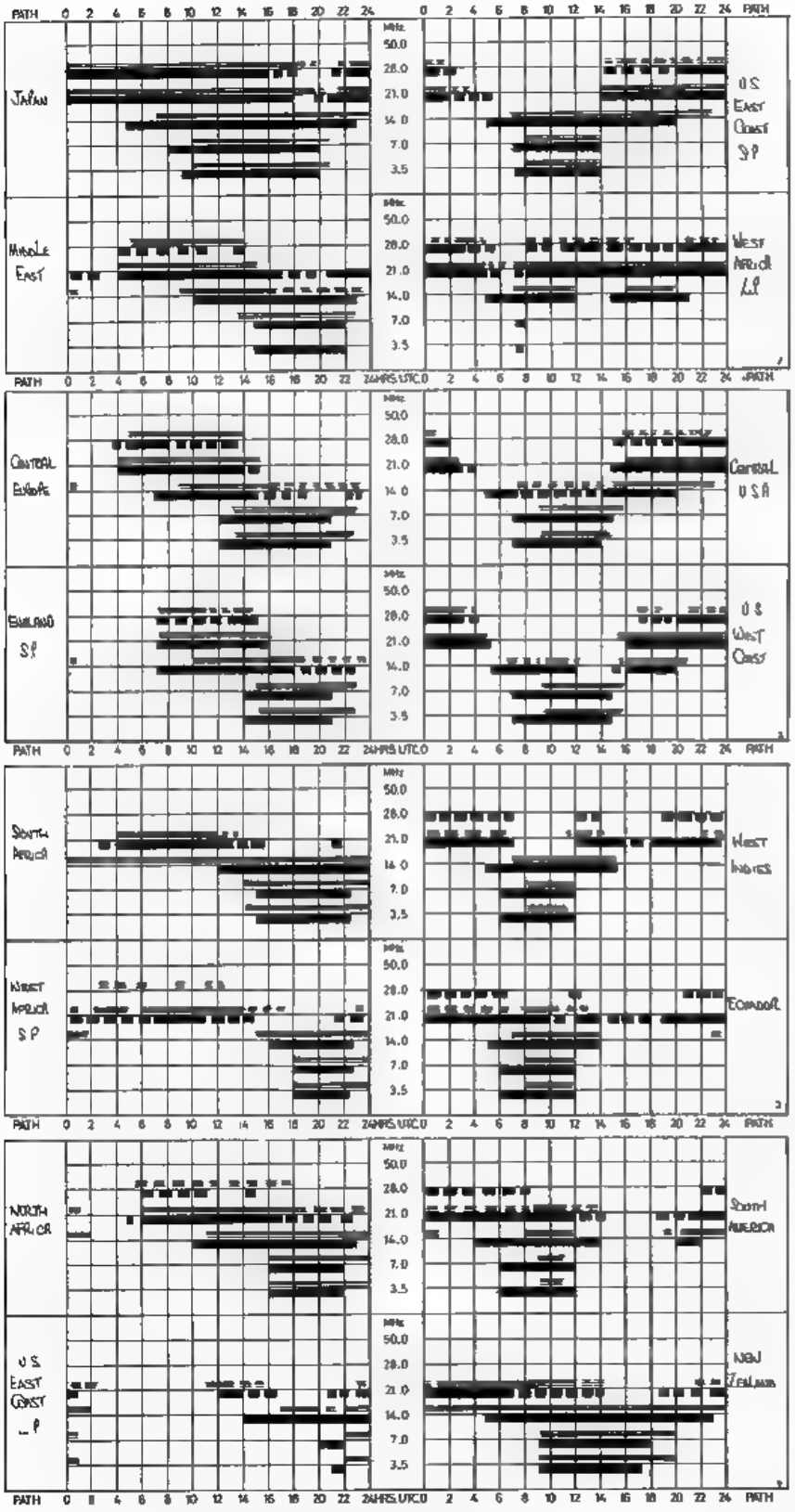
***DEALER ENQUIRIES WELCOME**

CW ELECTRONICS

CNR MARSHALL RD & CHAMBERLAIN ST.
TARRAGINDI – BRISBANE, QLD.
"YL's and XYL's call me for Christmas advice — Brian

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



LEGEND

FROM WESTERN AUSTRALIA

FROM EASTERN AUSTRALIA

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY

LESS THAN 50% OF THE MONTH

PREDICTIONS COURTESY IPS, SYDNEY. ALL TIMES UNIVERSAL UTC (GMT)

DIAL-A-PROP

A telephone service, telephone (02) 269 8614, provided by the Ionospheric Prediction Service detailing the state of the sun, the ionosphere and the earth's magnetic field began on 1 October 1979. The daily report includes the following details

1. The current status of IPS disturbance warnings. If one is current, its text will be given. The warnings include details of solar activity sudden ionospheric disturbances (daylight fadeouts), and current and expected geomagnetic disturbances.
2. The current state of solar activity (flares, active sunspot regions), and the expected course of solar activity over the next three days. Flares are described on the M (1-9) and X (1-9) scales which refer to their medium or strong X-ray effect.
3. A report on ionospheric conditions in the Sydney area and a forecast of general radio propagation quality for the next three days (good, fair, poor).
4. The current state of the geomagnetic field and its expected behaviour over the next 24 hours.
5. The Ottawa 10.7 cm solar radio flux for the previous 24 hours and the predicted values for the next three days.
6. The observed magnetic A-index (Fredericksburg) for the period two days previously and the predicted values for the following three days.

The duration of the message is between 45 and 90 seconds and the contents of the message is updated daily at about 1000 AEST (0000 UT), with more frequent amendments at times of high solar, geomagnetic, or ionospheric activity.

This service is titled the IPS Daily Solar Geophysical Report and the telephone number is (02) 269 8614. ■

YOU and DX

Mike Bazley VK6HD

6 James Road, Kalamunda W.A. 6076

I enjoy chasing DX! No doubt you do, too, otherwise I expect you would not be reading this. Unfortunately VK6HD only has a few hours per month to spend on this hobby and therefore does not, by any means, hear all that is going on. If you really believe that AR should have a DX column why not do your bit by providing information. All that is needed is a short note on a piece of paper stating that you heard so and so was going to "Woop Woop". When I wrote the first copy for this column I mentioned that I only got the job because no one else was willing, I assumed that others would think it worthwhile and would chip in. I'm happy to collate the information but I cannot be on the bands 24 hours a day; between us all we can cover most bands, most of the time for the benefit of all. How about you? What have you heard worked? Have you any DX photos? Remember, it's our column, if you want it to be, or will you let it die a natural death. Please spend 20 cents this month.

DX NEWS, RUMOURS, FACT AND FICTION

A couple of months ago I asked whether anyone had received a QSL from YI4SC. No sooner had this query gone to print when the QSL was received. YI4SC was a special call issued to a scientific camp and the QSL was received via Box 5864, Baghdad. These things come in cycles, of course, and at about the same time the QSL had arrived a QSO was made with YI1BGD/P, who complained to me of the lack of VK stations in his log! He asked me to pass on to those interested that he operates around 14210 kHz most days from about 1700 GMT. That time is a bit of a killer, especially in the eastern States. QSLs via the QTH given above. The amazing thing with the QSO I had with him was that there was absolutely no pile up and after our QSO he had to make a couple of CQ calls to get his next contact. It looks as if this country at least as far as

Europe as concerned is off the wanted list. Thinking about the trouble I had in finally nailing this country, my thoughts went back to the late forties and early fifties when YIs were ten a penny we didn't have decima currency then!) and the band was full of C, VS9, XZ, etc., all countries I now need from VK6

Did you QSO one of the T4s the other day? Stations heard active from here included T4A, ZS6AEC/T4 and WA6QFO/T4. QSL the last named via K9KXA T4 is another independent state within South Africa along with S8 and H5. Rumour has it that those areas will be counted as new countries by the ARRL DXCC committee after March 31st, 1980, but QSLs will be accepted from the date of independence The moral of this story is that if you are a DXCC QSL chaser it might be as well to make sure you have the QSLs from these three.

For those of you who chase LF DX I hope you did not miss the superb two day openings during mid-September. If you did next time ten metres appears to be really flat check the LF bands at sunrise or sunset For VK6HD 160 metres produced 25 W OSOs plus one European and the opportunity to hear, but not work, my first JB5 station on the band Lots of other VKs were heard making DX QSOs and everyone seemed to have their own mini pile up

At the other end of the scale 10 metres has been just as good with the following being reported AP A2, A7, C6, CP D2, FG, FM, J6, KH2, PZ, S6, ST, VP8, ZD7, ZD8, ZP, 3B9, 5T5, 5H, 7P, 9X5, to name just a few One really needs to keep on one's toes when those sunspot numbers start climbing Whether LF or HF DX, it is all good fun and adds pleasure to our unique hobby

Franz Joseph Land now has three active stations, LA1PAL, UK1PAA and UK1PGO. All of these are fairly active on CW, usually around 14024 kHz. It is also reported that a SSB rig is now on its way, so those of you who chase on the "Donald Duck" mode would suggest that 14140 kHz may be a good frequency at around 0500 GMT

KH5 — Kingman Reef and Palmyra Seven operators plan to put these spots on the air in November using 4 stations, all bands 10-160, CW and SSB. It is reported that the US government intends to purchase Palmyra for use as a nuclear waste dump If this is true it could mean that this would be the last from this area

Marion Island, ZS2MI, still being reported active on 14240 daily from about 1200 GMT If you still need this one it looks as if a bit of midnight oil burning is required but at least the band is open to South Africa at that time of morning

Still need A5I Bhutan? Try checking into the South-East Asia net on 14320 at 1200 GMT or alternatively look around 28570 at weekends between 0800-1000 GMT

HK0EEA is a new station active from San Andreas Island QSL via PO Box 484, San Andreas Island. Colombia.

That XZ operation mentioned in an earlier column still looks good Keep checking 21225 kHz with an occasional check on 14225 kHz

LU3ZY, Sandwich Islands, is now being reported on all bands from 40 to 10 metres CW. Mostly working into Europe or North America It has been reported that he has been on 21240 kHz. At present there has been no confirmation of this SSB operation

VP5WJR is quite active on 10, 15 and 20 SSB. Bill asks for QSLs via WB5UEP

Two new stations have been reported active from Syria. OE2SPW/YK has been worked on 10 CW and SSB and asks for QSLs via his home QTH. and VE1AMA/4U is on from the Golan Heights and asks for his QSLs to be sent via VE3KQI

A note from VK3NOY mentions that 28500 kHz is used as a primary call frequency for mobile stations and could other stations keep this frequency clear For myself I do see some problems here, in that certain DXpeditions operate just below 28500 listening a few kHz up

The photo of the OE6XG/A DXpedition site was kindly supplied by Ken VK3AH It is worth noting

Abu Ali OE6XG/

that this operation from Abu Ali produced 12,700 contacts, and I'm sure that anyone who heard them on 10 metres was able to make a QSO. The equipment, apparently, was supplied by JY1 King Hussein, the operators being I2CBM, I2FGP, J28AZ, DJ9ZB and OE6EEG Ken also mentions that 5V7GE is very active in 14182 or 14340, QSL via VE2AS, and that OX3EA often calls into the Pacific DX net (14265 Tuesdays and Fridays)

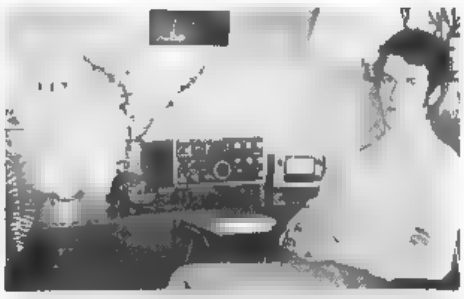
Murray VK4KK notes a few goodies for the rumour corner, F6FFQ/TT8, TT0KP, supposed to be QRV, also TL8JM, is reported as being back on the air. At the time of writing there has been a change of government in TL8 land, so I don't know what this will do for further TL8 operations! On the positive side Murray reports ST0FT (QSL via DL7FT), VP8SB (QSL via G3ZMF), N8ZV/3D6, DJ8NX/HB0, AP2TN, 3B6CD to mention a few on 14 CW, and OY5NS, SV9JI (QSL via Box 502, Iraklion, Crete), 5N0DOG, J6LCT, T2AAA, 9X5PP, to note a few on 20 SSB. All in all, taking all the DX bands it looks as if "we have never had it so good"

Pse QSL! A phrase that is said more often to an Australian amateur than used by him. What is your reaction to a request? Most will reply "sure QSL" but only a few mean it. QSLs now represent a reasonable outlay in funds, so let's try and have an honest QSL policy If you do not QSL, say so; if you only QSL on receipt, say so; If you only QSL against an addressed envelope and return postage, say so, don't let the person at the other end waste his time and money Remember there is no obligation on the part of a station to QSL, but there is a moral obligation to be honest in your reply to the request "Pse QSL!"

For the DX chasers on 10 and 15 I hope you have been enjoying those long path openings. With the northern winter now in full force try pointing your beam to the north and start using the "Northern lights" as a reflector It's amazing the goodies that come to light on this unusual path.

TN0HL is still being reported as being active on 21 MHz SSB. Usually heard somewhere around 21 160/170. The operator "Joerg" is a DM and should be there for approximately one year. He does not like pile ups and tends to QSY when the going gets rough. QSL via DM2XLO, Wolfgang Lichthardt, Logauweg 6, D-1117, Berlin GDR

Louis Varney G5RV will be in Uruguay from early December, for six months, operating under



SP3BQD

the call LX5RV and will be looking for VK QSOs. G5RV, who has held the call VK8LV, is perhaps better known for his 5RV multi-band antenna

VK4DY has forwarded details of a trip he is making to Norfolk and Lord Howe Islands. Fred will be active from VK9ND 1 December until 9 December followed by Lord Howe from 10 to 14 December Preferred frequencies 3 550, 7 100, 14 150, 21 195 and 28 500 Operating will be sporadic as this is a holiday and not a DXpedition trip, but he suggests that checking 80 metres upwards from 0900Z to 2100Z may find him. All QSLs will be answered via the bureau

[illegible]

H8A-H9Z has been allocated to Panama. T4 has been allocated to Vendaland (Did you catch T4AHC on RTTY or WA6QFO/T4, T4A, ZS8ZS/T4 or ZS6AF/T4? QSL T4A via ZS6AK, ZS6AF and ZS6ZS via ZS4ML) T3 has been allocated to Kiribati (Kiribati comprises Gilbert Islands and Ocean Island VR1, Phoenix VR1P and Christmas Island VR3) Those PA50, 51, etc stations are in recognition of 50 years of amateur radio in the Netherlands. Operation was from October 10 to November 10 PA0 equals PA50, PA3 equals PA53, etc

The tentative dates for the N2KK DXpedition are as follows. November 24 FR7, December 1 FR7/T, December 10 FH8, December 15 FR7/G, January 1 FR7/J, January 10 3B8. January 12 3B9, January 20 5R8 and January 30 6O2 Cost is set at $30,000

Dave will be accompanied by K5CO and N5AU, CW/SSB operation on all bands 10-160m. Donations to WB5WYE Ind an Ocean DXpedition Trust Funds, Commonwealth Bank, Box 34349, Dallas, Texas 75234 (Thanks G Watts.)

During the recent ZK1 Manakiki DXpedition the boys rattled up over 15,000 QSOs. There is no doubt about it, the QSO rate in a DXpedition is about three times above the rate, of say, 10 years ago. Do we all have better gear or are we better organised?

ZS2MI still very QRV on 15 and 20 SSB, but is reported to use CW on either band on the 25th of the month. He has not been heard at my QTH on CW, though has been copied several times on SSB

If you QSOed U0Y during October-November you should direct your QSL via UK0AAA. This DXpedition was very active and was reported on all bands 80 to 10m CW and SSB QTH Tannu Tuva, which is in Zone 23 for WAZ.

A7XA a QRV every Sunday on 28050 at 1200Z working to a list taken earlier by a DL station. To get on that list I would suggest monitoring the frequency from about 1130 GMT.

4U1UN has been active lately on 28002/3 CW. Most Friday mornings (WA local) from around 2130 GMT.

VP8SO (South Orkneys), VP8VN (South Georgia), VP8QI (Argentine Islands) are three stations quite active on 20m SSB. QSL via G3KTJ, Bureau and G4CHD respectively

OE3GEA and three other West African Communication Research Society members plan a trip to CN, 3V, 5U, XT, C5, etc., November 1979 to January 1980. Further information available from PO Box 20, A-4023, Linz, Austria. Donations are sought and the QSL manager will be OE3GBB

One doesn't hear many TA stations active these days TA2KS is reported as being QRV daily on 14235 ± from 2030 GMT QSLs go via G3SCP.

The Franz Joseph Land station is still being reported active. Usually the call to look for is UA1PAL and he can often be found between 14012 and 14027 CW

Several S8 stations are being reported active. Though these are not in the DXCC list rumour has it that they soon will be accepted by the ARRL and confirmation will count from the day Independence was granted Look for S8AAT on SSB and S8AAM on CW

Those needing Bangladesh should look for DK9KO/S2 QRV on SSB 10, 15 and 20. Urban will be there for three years. QSL via PO Box 108, Dacca

A22 is the new prefix for A2C. I don't know about you but for myself I have difficulty in keeping up to date on prefixes these days.

That is it I'm afraid for this month. Thanks to VK3AH, VK3NOY, VK4KX, VK6AJ and VK6LK. Also to Geoff Watts' News Sheet. Have fun, good DX.

Have a very happy Christmas and I hope that 1980 brings you all that you require to live happily Thanks during the past year to all who have supported this column

73 es DX Mike VK6HD.

QTHs YOU MAY HAVE MISSED

CN8CG — Via F6ETL
CT2QN — Via W2KF
D68AK — BP 50 Moroni, Comoros.
F0FIC/FC — Via DF3CB.
FG7AS — Box 444, Guadeloupe.
FP8AA — Via K2RW
FW0XN — Via DK7XN
FW0XR — Via DK6XR.
J28CA — Box 215, Djibouti
KC6SX Via JA1NRH.
KC6SZ — Via JE1JKL.
KX6PW — Via KH6JUO
T2AAA — Weather Station, Tuvalu, Central Pacific.
T4AHC Via K9KXA
TR8CR — Via F6AQO.
VK9YN — Via WA3HUP
VP8SU — Via G3RCA.
VQ9TR — Via N2IT
XT2AV — Via VE2DFR,
OE2SPW/YK — Via OE, Buro.
ZS2MI — Via WA2IZN.
3B8DB — Baccus, Modern Square, Vacoas.
3C1AA — Via EA4MY
5W1CF Via N6DX.
9N1MM — Via W3HNK.
EA6DD — Box 14, Palma, Majorca.
FK8DD Box 3040, Noumea.
FY7BF — Box 733, Gayenne.
GJ5CZQ — Via DK7JR
HH2VP Via N4XR.
WD9OGO/KH7 — Via KH6JEB.
W6SOT/LX — Via DA1TM.
OY5NS — Via W3HNK.
VP1SM — Via W5OPX.
VP2KAA — Via N4PN.
VK9TR — Via N2IT.
VS5DD — Via G4EXY
ZS3AG Via WA2JUQ.
3B8DB — T Baccus, Modern St., Vacous, Mauritius.
3B9CF — Via 3B8CF, 6 Shastri Rd., Canous, Quatre Bornes, Mauritius.
3D6AX — Via WA5IEV.
5N0DOG — Via W4FRV.
9Z5PP — Box 863, Kigali

AROUND THE TRADE

GFS VICTORIAN DISTRIBUTOR FOR SWTP

Recently GFS was appointed Victorian distributor for South-West Technical Products Corporation USA (SWTPC), manufacturers of new and powerful Motorola 6800 based computing systems.

The machine's capacity and options range from hobby level through to business or professional level. Also we have available a large range of supporting software packages, which includes a number of amateur radio oriented programmes such as log bookkeeping, RTTY transmit and receive, and shortly we hope to have morse code software.

JOYSTYKIT GUIDE

Jostykit now include a Kit Guide with kits being assembled for sale in Australia. Very soon all kits will have this manual included. A sample of this kit guide shows it to be a most comprehensive aid to anyone assembling the kits. It provides assistance in identifying components and in soldering technique and is packed with useful tips and information.

Jostykits are available from VICOM and their distributors.

PLEASE SUPPORT OUR ADVERTISERS

TEMPERATURE CONTROLLED IRON FROM SCOPE

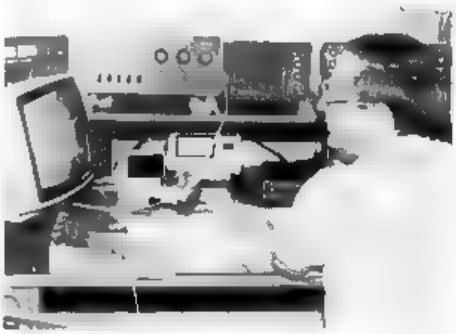
Scope Industries have recently announced the release of a 60 watt pre-selectable and automatic temperature control iron The TC60, as it is known, follows a line of similar irons and features 14 interchangeable iron plated tips, a handle cooling device and an ability to display any temperature between twenty and four hundred degrees Celsius.

For further information contact Barry McIntosh, Scope Laboratories, 3 Walton Street, Airport West 3042. Phone (03) 338 1566.

CW ELECTRONICS

Brian Beamish VK4AHD, well known Brisbane amateur, has opened his own amateur radio shop in Tarragindi, a suburb of Brisbane

Cres Everdell VK4ZAO will manage the shop. Cres, himself a well known amateur, will also be remembered as previous manager of Dick Smith's Brisbane Store.



A rather unique introduction letter was sent to over 2000 northern amateurs. The letter included a survey form. We are still waiting to see if any of the several hundred replies has won $15,000 from a half share ticket in the Queensland lottery offered as an incentive

NEW ANTENNAS

Chirnside Electronics have recently expanded into the field of antenna manufacturing and now manufacture a range of amateur antennas

They currently have available a range of mono band beams in various sizes, but their most popular is the CE4-2 15-10m duo-band This beam antenna will cover 15-10m and is in great demand for novice use, having 8 dB forward gain and better than 20 dB F/B ratio. The boom length is 13 ft., the longest element 23 ft 6 in., and weighs approximately 15 kg. Recommended retail price is $139, which includes a 1 : 1 balun.

Also available is a new range of top loaded helical whips from 80m through 10m. They are manufactured from 3/8 in. solid fibreglass rod and covered with good quality heat shrink PVC tubing and take a 3/8 x 24 TPI thread They also have an adjustable stainless steel rod for easy tuning. Recommended retail price ranges from between $19 and $22.

For further enquiries contact Chirnside Electronics, 26 Edwards Road, Lilydale 3140. Phone (03) 726 7353.

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Ave., Flinders Park, S.A. 5025

SUN VALLEY AWARD
Here are the details of an award issued by the VK4 Brisbane Sun Valley 10X Chapter. The award is available for working 10X Chapter members on 10 metres.

NET FREQUENCY AND TIME
Saturday on 28.595 MHz at 2330 UTC.

BASIC AWARD
Requires 10 points, including one BC or one VIP member. Cost $2.00 airmailed — award value 1 point.

FIRST ENDORSEMENT
Requires 50 points, including one BC or one VIP member. Cost $1.00 airmailed — award value 1 point.

SECOND ENDORSEMENT
Requires 100 points, including two BC or VIP members. Cost $1.00 airmailed — award value 2 points.

VIP PENNANT
Requires 250 points, including five BC or five VIP members or combinations. Cost $3.00 airmailed — award value 6 points.

NOTE
Any station may be worked twice for the VIP Pennant and the points totalled, provided the contacts are 24 hours or more apart. All points can be carried forward to the next endorsement.

Basic award holders are classified ASSOCIATE members and are denoted by the suffix "A" — value 2 points.

Chapter members by number only — additional $1.00, worth extra 1 point.

Charter members are designated by suffix "C" — additional $2.00, worth extra 2 points.

First State and First Country add one point to credit value.

Charter members are worth five points each.

DESCRIPTION
The award measures 255 mm x 225 mm printed in two colours on matt finish yellow card. The two logos are in red and the remainder in black.

Applications should be submitted to the Awards Manager, PO Box 90, Holland Park, Brisbane, Qld. 4121, Australia.

MINERAL FIELDS AWARD
This award is available from the Mount Isa and Districts Radio Group. It is issued to create an interest in the north-west of Queensland and to bring an awareness of local conditions to interested amateurs.

The award is on a points attained basis, and point scores are as follows:

Contact with a Mount Isa Station on HF — count 1 point.

Contact with a Mount Isa Station on VHF — count 2 points.

Contact with a District Station on HF — count 2 points.

Contact with a District Station on VHF — count 3 points.

RTTY and CW counts double points score for that contact.

The District Stations are those stations within the boundary of the area north of Boulia to the Gulf and west of Cloncurry to the Northern Territory border.

Stations can be claimed one per band, per mode (phone, CW, RTTY), e.g. VK4ACE: 80m phone, 40m CW and phone, 15 CW and phone and VFH equals 1 (1 plus 2) plus (1 plus 2) plus 2. Contacts after 1-1-76 may be claimed for the award.

AWARDS

1. LEAD/ZINC
10 points, at least one contact with a station in Mount Isa and one District Station compulsory.

2. COPPER
LEAD/ZINC plus 5 points.

3. SILVER
LEAD/ZINC plus COPPER plus 5 points.

When applying for this award CHC/GCR rules shall apply.

DESCRIPTION
The award measures 255 mm x 400mm printed in three colours on high quality matt finish white card — border and background in yellow, illustrations in brown and black.

Applications should be submitted to the Awards Manager, Mount Isa and Districts Radio Group, PO Box 232, Mount Isa, Qld. 4825, including 4 IRCs or equivalent ($1.20) to cover P & P and costs.

Good hunting. ■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

NEWS FROM VK YL
In Tasmania, there are a few YLs who are active on the bands. Helene VK7HD has regular skeds on 20m and 10m each week. You can catch Helene during the day providing she's not relieving a vacationing pharmacist or assisting her three teenagers with their activities. She is also the secretary of the Southern Branch Tasmanian Division WIA and the State Co-ordinator for ALARA.

Sue VK7NSU/ZSU has had the double call sign since February 1978. Her radio activities involve her on the executive of the Southern Branch Tasmanian Division WIA, as Southern Scribe for their QRM Newsletter, and on the Tasmanian Amateur Advisory Committee. On the air, Sue is very active on 2m. She was on holidays in Queensland during October with her two children and made contacts through the local 2m repeater.

Pauline VK7NPK passed her NAOCP last year, along with her husband. Both sat for the last AOCP exam and are awaiting the results.

In the north is Lucy VK7NSB, who received her Novice ticket in October 1978. Lucy is secretary of the Northern Branch Tasmanian Division WIA.

The Annual General Meeting of ALARA was held at the home of Heather VK3AZU in Brighton, Victoria. Results of the elections will be posted next month. YLs interested in joining ALARA are invited to write to the Secretary, Box 110, Blackburn, Victoria 3130.

The ALARA net is Monday evenings at 1030 GMT on 3.56 MHz ± QRM.

Mavis VK3BIR, president of ALARA, travelled to Port Vila in October and operated with a YJ call sign. The pile-ups were incredible and Mavis worked the DX stations easily and tirelessly.

Congratulations to Daurel VK3ANL (VK3NCS) for her award from the YL-OM Contest. Her category was YL from Australia on CW.

VK3NQQ. ■

DIVISIONAL NOTES

VK2

The University of NSW Amateur Radio Society will hold its 7th annual amateur radio study course from 14th December. The course extends for 6 weeks, is held on Tuesday, Thursday, Friday and Saturday, 18.00-21.00h at the WIC, 14 Atchison Street, and enrolments can be for either the Novice course or the AOCP course. Cost $22 per head ($5 morse only), all textbooks and notes are supplied. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means address is correct as set out in the WIA 1979 Call Book.

FOR SALE

12 Brand New 4-125s, still in cartons, $15 ea.; also like to purchase or swap sockets to suit same. VK6ZED, QTHR.

TH6-DXX Beam, 6 el., 10-15-20m, with BN-86 balun; two C42 36-60 MHz FM transceivers with 24V DC PSUs, mics, cables, ATU. Offers to VK2BRB, QTHR. Ph. (065) 45 1527.

Swan 500C EC, ext. 508 VFO, VX-2 VOX, 230X and 14C DC power supplies, box spares and tubes, $400, ONO. Jack VK3NQA, QTHR. Ph. (03) 523 6537.

Palomar (USA) IC Keyer, brand new, now unwanted, sends manual, semi-auto, dot memory, squeeze and iambic, 5 to 50 w.p.m., operates from 9V transistor battery, purchased direct ex USA, including duty, for $122 (retail in VK $139), will sell $120, ONO. VK2BFJ, QTHR. Ph. (043) 32 5758.

KDK FM201, 6A, 1000 ch. 4 memory with memory scanner, 15W output, 2m rig, $300, ONO, Barry. Ph. (02) 99 4993 after 6.30 p.m.

Kyokuto 2m FM Transceiver, synthesised, 800 ch., with inst. book, as new, $280, ONO; FL2000 Yaesu linear, with inst. book and 2 sets spare tubes, $250. VK3PR, QTHR. Ph. (056) 62 2711.

Kenwood TS620S Tcvr, as new, transmitted only into dummy load, $590, ONO. Will consider swap for micro-computer equipment. R. Pardini VK6ZAE, QTHR.

FT101B, exc. cond., little use, all access., new finals, $590; Kenwood TS600 6m all mode Trx, new, complete in factory packing, $590; Kenwood TR2200G 2m portable, exc. cond., nicads, built-in charger, complete, $150; 14AVQ-WB 10-40m trap vertical, good cond., inst. book, $70. VK6YX, QTHR. Ph. (08) 74 2350 Bus., (08) 274 7219 A.H.

Kenwood TS820, complete, dig. display, DC-DC power supply, 4 fix xtals fitted, aux. band installed, "Phantom" DC supply at mic. socket for preamp mics., wired for headset mic. comb, add. rear outlets for access 12V, foot PTT, recorder, factory mods done, Hi Gain FETS fitted with sockets, owner's manual, workshop service manual with bulletins, cables, original carton, $950. VK2BXU. Ph. (02) 57 4648.

204 BA 20m Monobander, 4 elements, $140. Ph. (03) 592 7662.

Kenwood TS620S with 12V op., good cond., $600; also FT200, unmodified, ideal for Novice use, $400 (both for urgent sale); also two Rxs of interest to listeners at $100 each. VK3BKT. Ph. (03) 62 4575 Bus., or (03) 288 2346 A.H.

Generator, Kawasaki KG1300, 240V, as new, $350; Icom IC212 (IC215), nicad batteries, xtls R1 to R6, 40, 50, $250; Trio 9R-59DS Rx, exc. cond., $120. VK2WW, QTHR. Ph. (02) 546 1927.

KW2000A, 160-10m, $425; 6 and 2m transverters, complete with own built-in p/supply, $180; 27/3.5 transverter, $80; VS41 trap vert., $70; 432 ATV Tx and sub-carrier generator, $90; Hallicrafters HT37—3.5, 10 m, $150; K109 SWR bridge, $20; 2 and 6m connectors, 7 MHz IF, best offer; also 2m AM T/R, best offer. Ph. (043) 96 4553.

Yaesu FL/FRDX400 Tx and Rx, good cond., spare finals, $500. Don Campbell VK2DAC, QTHR. Ph. (02) 440 8382.

FT200 Yaesu Transceiver with AC power pack, FP200, in good working order, $300. VK3BW, QTHR. Ph. (03) 59 2322.

TH3JNR 3 el. Triband Bm., still in carton, new, unused, 6 months old. VK2NVA, QTHR. Ph. (02) 909 1130 A.H.

Kenwood TS520S, 9 months old, AC-DC, good cond., 30W, suit Novice, manual, $520; Oakerblock SWR-200, $60; MOD-02X, instructions, suit Cybernet CB, up to 400 ch., unused, $50. Ph. (07) 282 2449, QTHR.

Converted Johnson Viking, covers full 10m Novice band, $120. VK3BXS, QTHR. Ph. (03) 439 9328.

Swan 500C with power supply, spare valves, 400W PEP, excellent cond., $400, ONO. VK2BLK, QTHR. Ph. (02) 57 5606.

Converted CB for 10m Universe SSB 224M, 23 ch. in 5 kHz steps, 5 kHz clar., 28.480 to 28.595 MHz, complete with mic., power cord, mounting bracket and handbook, only 2 months old, works exc., sell for $90. John Brereton VK5NHB, QTHR.

Signetics KTB600 (2650) with RSMB, 16k ram, PSU, manuals and software, all working, $400. VK5ACE, QTHR.

2m FM Multi 7 Tcvr, simplex 40, 50, repeaters 2, 3, 4, 5, 6, 7, 8, $165; 6m AM, SSB Tcvr, Belcom Liner 6, 6W AM, 20W PEP, $240. VK3CBA. Ph. (03) 232 0005 A.H.

Yaesu 2m FT221 all Mode Tcvr, little use, as new, spare PLL board, English Inst. manual, carton and packing, $600, ONO. VK4GB, QTHR. Ph. (07) 396 2321.

Yaesu FT225RDM, 2m all Mode Tx/Rx with digital R/O, memory, AC or 12V DC, is matching equip. to FT901, FT101Z, and FT625, 25W out., in mint cond., compl. with higain long yagi, no further use due to change in QTH, $750 firm; ATU-HY power labs model HS250, as new and surplus to requirements, $50; auto CW keyer, Katsumi MK1024, selectable auto or semi-auto dashes, four indep. linkable memories of large message capacity, 5 to 80 w.p.m., iambic operation unit will run from AC or 12V DC, will key either by relay or solid state with back panel switch, $125. Ian Foster VK3ST. Ph. (051) 56 8311.

Hallicrafters HT37 Tx, CW/SSB, 80-10m, in very good cond., with manual, $130, ONO. VK3AUC, QTHR. Ph. (03) 99 2470.

FTV-650 6m Transverter, complete with all leads and manual, $170; FR101D digital Yaesu Rx, 160 to 2m, has all xtals and filters, mint cond., necessary connection leads and manual, $600. VK4UX, QTHR. Ph. (074) 62 2596.

Yaesu FT200/FP200, late model (black front panel), good wkg order, plus some useful mods, including 6EH7 RF and IF mods, some spare values and handbook included, $350; Swan 350, DC supply, by Harbros, uses 2N3055 translators, works OK, $40. Greg Nixon VK5ZER/NGN, 6 West Tce., Tumby Bay, SA. Ph. (086) 88 2455 A.H., (086) 88 2456 Bus.

Yaesu FTDX100 Tcvr, good working order, all solid state except driver and finals, recently o/hauled and aligned, includes new set of finals and handbook, $375. Bert Shire VK5NMS, QTHR. Ph. (086) 88 2276.

Triband Beam TA33 with 40m traps and balun, $175, ONO. VK3ACN. Ph. (054) 42 1286 Bus.

FT200 Tcvr, 80-10m with AC supply, handbook and ZL FT200 club notes, v.g. cond., $340; also model 15 teletype w/f, loop power supply, $45. Brian VK2BVH, QTHR. Ph. (02) 525 2547.

Hy-Gain Ant., 18 AVT, 80-10m trapped vert., $50; Q-Craft SWR meter SWR-2, $20; Katsumi elec. keyer, model EK-108A, $40; coaxial (5 posn.) switch, B & W, model 55A, $20. VK3AUT, QTHR. Ph. (03) 99 5206.

Multi-Palm II, complete in orig. pkg., exc. cond., 12 xtals (one each chan.), $230, ONO; Kenwood TS700A all mode 2m Tcvr, comp. with VOX 3 and MC30S mic., $550, ONO; Kenwood 2200G 2m FM Tcvr, 12 chans., AC-DC, car bracket, $100. VK2ZQH, QTHR. Ph. (02) 498 7867, A.H.

Kenwood TS700A 2m All-mode Tcvr, exc. cond., fully complete, $600, ONO; SV230 Siewa 2m mobile Tcvr, 25W out, ch. 2, 3, 4, 5, 6, 40, 50 and 51, $160. VK3BBM, QTHR. Ph. (03) 232 7084 A.H.

Trio-Kenwood Amateur TX599 Custom Special and JR599 custom special with speaker SP520 and mic., units can be used combined or separate, as new, $950. M. Gerdau, PO Box 80, Pennant Hills 2120. Ph. (02) 848 0414 A.H.

Johnson Viking Matchbox, 10-80m, coax in/out or single wire, bal. 2 wire line, relay switching, 2 kW PEP rating, $75; home-brew ant. matching unit, 10-80m, VSWR indicator, roller inductor Tx capacitors, wide impedance matching range, prof. appearance, sell for component costs, $50; Swan model 45 mobile ant., 10-80m, with switching, complete with base and spring, $65; Oakerblok SWR 200, as new, English manual, $50; Drake W-4 wattmeter, 0-2 kW, 0-200W, $80. Laurie Wade VK2AQW. Ph. (02) 649 8563 A.H.

Trio TS599 HF Tcvr, $350; home-brew frequency counter, 200 MHz, requires 1 MHz crystal, $90 or offer. Steve VK2ZSC. Ph. (02) 674 2104.

Kenwood TS-520S for sale or exchange for TS-120V. VK3NLH, QTHR. Ph. (053) 35 7563.

Kenwood TS820S with CW filter, $850; external UFO VFO 820, $120; Kyokuto 2m FM Tcvr, $240; Kenwood KP202 hand-held 2m Tcrv, with charger and helical whip, $150; KP202 good cond., all others as new. G. H. Herden VK5ZK, QTHR. Ph. (08) 297 4950.

Yaesu FRG 7000 Comm. Rx, 250 kHz to 30 MHz, digital readout, GMT/local clock display, $529. VK2BBJ. Ph. (02) 64 7170 A.H.

Oregon Masts, 1/33 ft., 2/22 ft., capped, painted, fitted nylon pulleys and halyards, steel cleats, complete with tilt-over footings and side plate; on ground, buyer to remove. Offers to VK3SV, QTHR. Ph. (03) 60 2330.

Yaesu FT101E Txcvr, AC-DC, fan, mic., etc., with SP101B ext., speaker, good cond., $650; Yaesu FRG7 Rx with narrow filter and Jackson slow tuning, exc. cond., $250. Enquiries to VK3NMJ, QTHR. Ph. (03) 789 3129 A.H.

2m Transceiver IC202, with H/B 4 element yagi, $175. VK3BCY, QTHR. Ph. (03) 848 4775.

Amateur Radio Magazines, 1974-1979, best offer. Ph. (03) 29 3709.

6m Linear Amp YL1060 Final, 200W PEP, incl. power supply, $85; Vinten MTR20 2m FM Tcrv with ch. 2, 40 and 50, xtals, $40. VK6ET, QTHR. Ph. (092) 276 8928.

Yaesu FTDX401B, mint cond., CW filter, noise blanker, also most spare tubes, sacrifice $450, ONO; would accept FT7 as part payment. VK3YOG, QTHR. Ph. (03) 873 4071.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. M. GRIMWOOD L31005

WANTED

6m Conversion information on ex-CB Equipment, "SBE IV" (or similar would assist), also circuit, copy for "Tiara II" LM 280 linear 10m amp, will defray all costs. Please send to VK2YGN, QTHR.

June 1979 issue of Amateur Radio which failed to reach my QTH during the recent NSW mail dispute; would be pleased to return same after reading it. VK2BFJ, QTHR. Ph. (043) 32 5758.

Drake CW Filters, 250 and 500 Hz, for R4C Rx, 1.2 kHz filter available sale or swap. Peter Nesbit VK3APN. Ph. (03) 317 9001 Bus., (03) 523 6932 A.H.

240V Power Supply and Speaker to match Yaesu FT200. Details VK5XR, QTHR.

Antenna Rotator, all hardware, also 3 element tri-band Yagi. VK2VKS, QTHR. Ph. (089) 62 4136.

R5223 Rx, ex Aust. Army and manuf. by TCA in 1965, circuit or any other information. Lionel VK4NS, QTHR. Ph. (07) 59 1845.

Amateur Building Blocks, require a set of boards or any partially completed boards or units for SSB transceiver, any cond. Chris Skeer VK5MC, QTHR. Ph. (087) 36 9014.

TRADE HAMADS

Hy-Gain Beams for 40, 20, 15, 10, 6, 2 and 70 cm, also UHF CB and ATV repeaters, DBI frequency counters and kits, Mirage PWR/SWR meters, also 2m amps with preamp. Write ATN Antennas, Box 80, Birchip 3483, for catalogue.

ADVERTISERS' INDEX

'DICK SMITH ( ) WILL MATCH ( ) ANY GENUINE ( ) ADVERTISED PRICE IN AUSTRALIA ( ) ON YAESU ( ) GEAR'

That's right! If someone advertises Yaesu for lower than our advertised price, take a copy of the advert to your nearest Dick Smith store. We will guarantee to match — and better any genuine advertised Australian Yaesu price! You can't lose!

INTRODUCING:

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- 320 channels 144 – 148MHz
- Auto or manual scanning
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- Memory with back-up
- Any repeater splits
- 12.5kHz scanning steps
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